

# Service Manual

Stereo Cassette Player

Mini Cassette

RQ-S30



Colour

(K)... Black Type



Area

| Suffix for Model No. | Area           | Colour |
|----------------------|----------------|--------|
| (E)                  | Europe.        | (K)    |
| (EB)                 | Great Britain. |        |
| (GH)                 | Hong Kong.     |        |

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## RQ-S60 MECHANISM SERIES (AR90)

### SPECIFICATIONS

|                    |  |
|--------------------|--|
| Power Requirement: | Battery; DC 1.5V one "AA" size battery (not included)<br>(Panasonic R6, LR6 or equivalent not included)<br>Rechargeable Battery; DC 1.2V with an included Panasonic Rechargeable Battery<br>(RP-BP62EYA) × 1..... (E, EB)<br>(RP-BP61SY-1)..... (GH) |
| Power Output:      | 5mW + 5mW  |
| Output Jack:       | Headphones; 16Ω (mini jack Φ3.5)   |
| Dimensions:        | (W × H × D) 107.9 × 77.2 × 22.9mm  |
| Weight:            | 165g (with rechargeable battery)   |

|                  |   |
|------------------|---|
| Charger: (E)     | Input; AC 220V, 50Hz, 4W<br>(RP-BC155EY-0) (included)<br>Output; DC 1.2V, 350mA                                   |
| (EB)             | Input; AC 240V, 50Hz, 4W<br>(RP-BC155EY-0) (included)<br>Output; DC 1.2V, 350mA                                   |
| (GH)             | Input; AC 100~120V/220~240V<br>50/60Hz, 6VA<br>(RP-BC161SYB) (included)<br>Output; DC 1.2V, 550mA (included)      |
| Frequency Range: | 15~20,000Hz (with a normal tape)<br>15~20,000Hz (with a CrO <sub>2</sub> tape)<br>15~20,000Hz (with a Metal tape) |
| Motor:           | Electrical governor motor   |
| Track System:    | 4-track 2-channel stereo playback   |
| Tape Speed:      | 4.8cm/s   |

**Note:** Design and specifications are subject to change without notice.  
Weight and dimensions are approximate.

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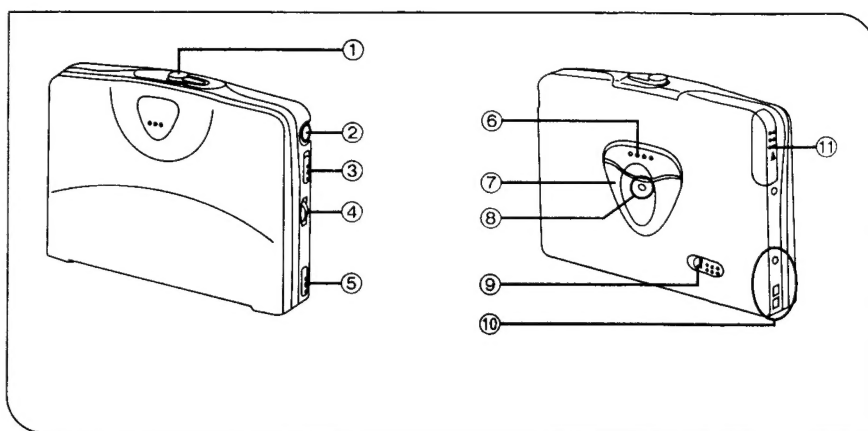
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# Panasonic

## LOCATION OF CONTROLS

### Main unit

- ① Cassette compartment cover open lever (OPEN)
- ② Headphones jack (  $\Omega$  ) 16 $\Omega$  ( $\phi$ 3.5)
- ③ Dolby noise reduction selector (DOLBY NR)
- ④ Volume control (VOLUME)
- ⑤ Reverse mode selector
- ⑥ Hold switch (HOLD)  
Use to prevent unwanted operation.  
The operation button is inoperable when this switch is set to hold (hold state).
- ⑦ Operation button (  $\blacktriangle$  /  $\blacktriangleright$  /  $\blacksquare$ , FF, REW, [TPS] )
- ⑧ Operation/battery check indicator (OPR/BATT)
- ⑨ Tone selector (OFF, S-XBS, TRAIN)
- ⑩ Connection part for battery case
- ⑪ Rechargeable battery compartment cover

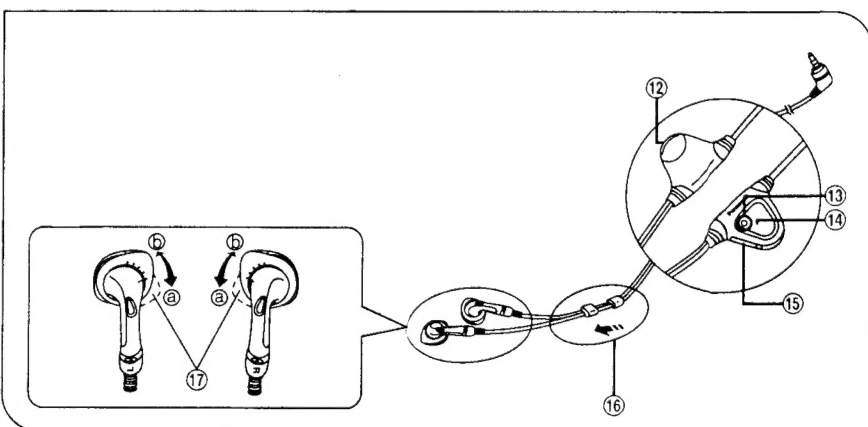


### Stereo earphones with remote controller

- ⑫ Volume control (VOLUME)
- ⑬ Operation indicator (OPR)  
Lights during operation.
- ⑭ Remote control button
- ⑮ Hold switch (HOLD)
- ⑯ Slider  
When not in use slide up the slider to prevent entanglement of the cord.
- ⑰ Fitting ring

#### Before using the stereo earphones

The size of the earpiece can be adjusted.  
When it's too loose in the ear, turn the fitting ring to (a), when it's too tight, turn to (b).



## REMOTE CONTROL OPERATION

You can change the tape operation with the remote control button (a).

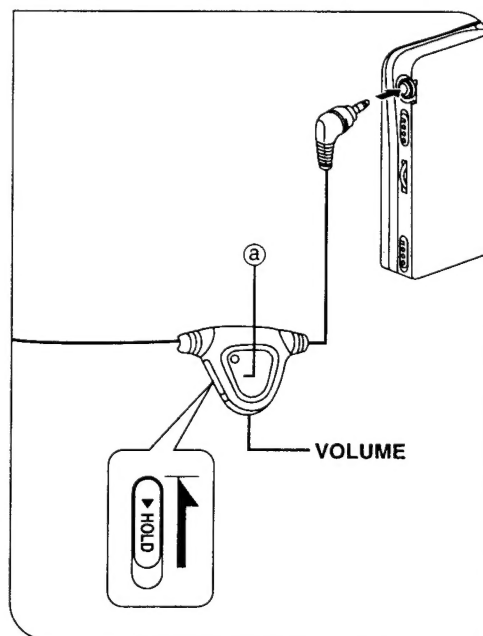
Before using, plug the stereo earphones into the  $\Omega$  jack and be sure to release the hold state.

#### To prevent unwanted operation

You cannot activate remote control button when the HOLD switch is set to HOLD (hold state). Before using remote control button, release the hold state.

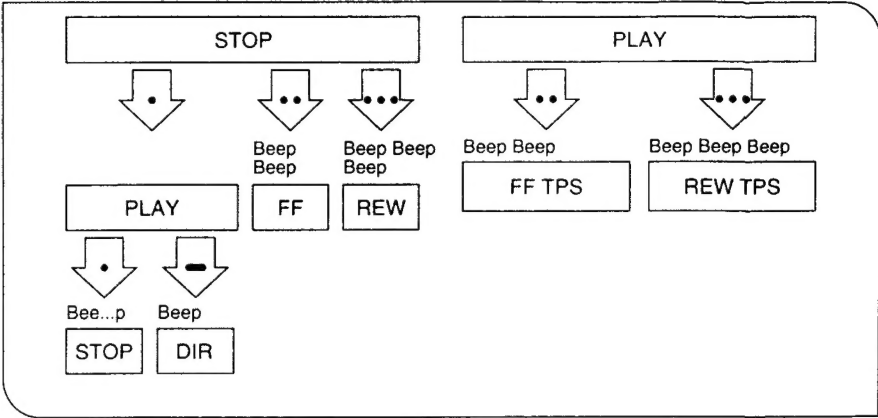
#### To adjust the volume

Before using the VOLUME on the remote control, be sure to adjust the volume control on the main unit. "5-7" is the average volume level.



To change the tape operation

- : Press once to play and stop.
  - : Press and hold to change the direction.
  - : Press twice for fast forward or FF TPS.
  - : Press three times for rewind or REW TPS.
- When pressing the button twice or three times in succession, press it within one second and at equal interval.
- Confirmation beep can be heard as shown on the figure.



POWER SOURCE

This player can operate on any of 2 different power sources:

1. Rechargeable battery (included)
2. Dry cell battery (not included)

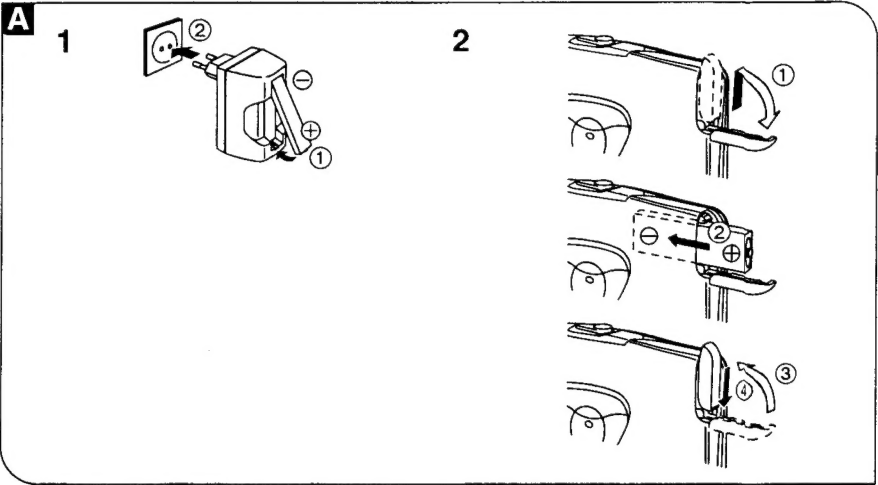
Rechargeable battery A

For its initial use after purchasing or after a long time interval (more than three months), be sure to recharge the rechargeable battery.

Normally 2 hours recharging will give approximately 4 hours tape playback (at 25°C).

•Play time may be shorter depending on the operation conditions, e.g. repeating fast forward or rewind etc.

- 1 Recharge the rechargeable battery.
  - For (EB), the shape of the charger is different.
- 2 Insert the charged battery into the unit.



Dry cell battery B

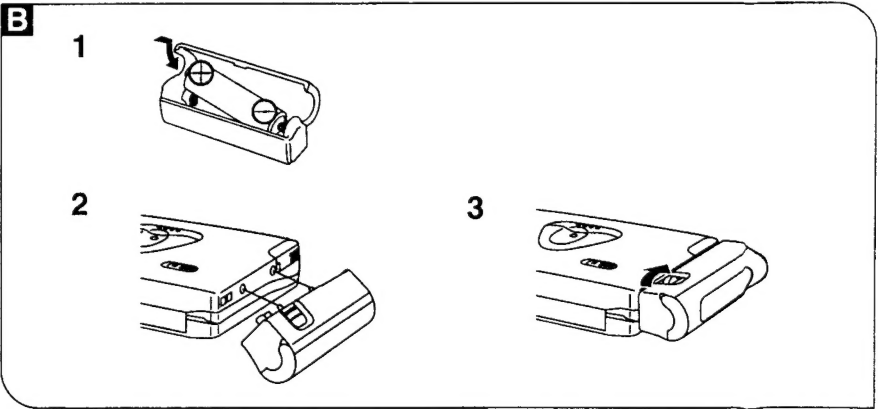
- 1 Insert a R6/LR6 battery (UM-3 or equivalent, not included) into the battery case.
- 2 Attach to the unit.
- 3 Turn the screw until it locks.

To extend the playback time

Install both types of battery (rechargeable and dry cell battery) in the unit.

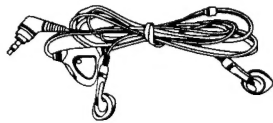
When the battery becomes weak

The OPR/BATT indicator will dim or turn off. Recharge the rechargeable battery or replace the dry cell battery with new one.



ACCESSORIES

Stereo earphones with remote controller ..... 1 pc.  
(RFEV124P-KS)



AC plug adaptor ..... 1 pc.  
(RJP0K2ZA (GH))



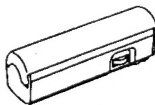
Charger ..... 1 pc.  
(RP-BC155EY-0 (E)) (RP-BC161SYB (GH))  
(RP-BC155EBYA (EB))



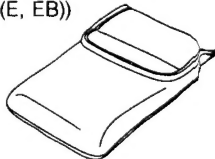
Rechargeable battery ..... 1 pc.  
(RP-BP62EYA (E, EB))  
(RP-BP61SY-1 (GH))



Battery case ..... 1 pc.  
(RFA0310-K)



Carrying bag ..... 1 pc.  
(RFC0019-K (E, EB))



## ■ PROCEDURE FOR THE REPLACEMENT OF THE MECHANISM BLOCK

### • How to replace the mechanism block

The mechanism block is supplied without other parts as a semi-assembly. The head block, motor and belt are supplied separately from the mechanism block.

If the mechanism block is exchanged as a replacement assembly, follow the preparation procedure below.

#### Preparation procedure

Remove the head block, motor and belt from the mechanism to be replaced and replace those parts to the new mechanism block.

(Refer to the “PROCEDURES FOR DISASSEMBLY OF THE MAIN PARTS ON THE MECHANISM”.)

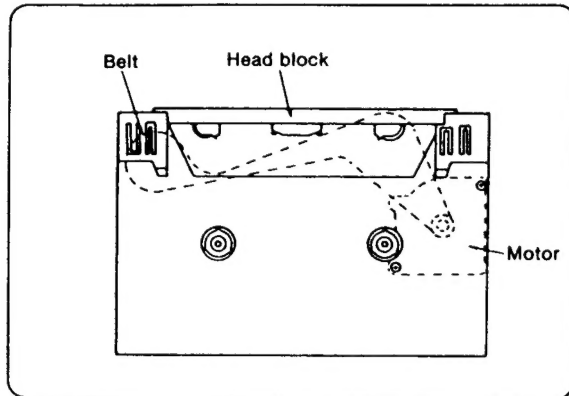
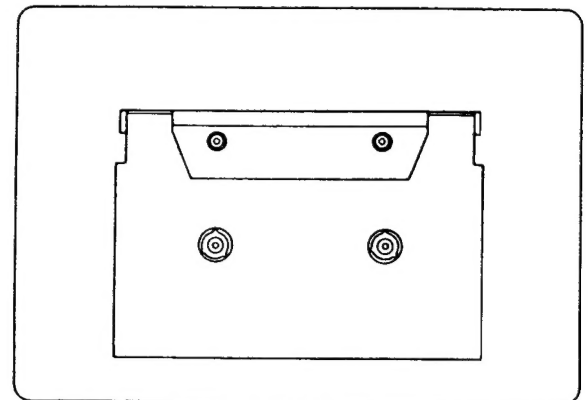


Fig. 1



Mechanism block

Fig. 2

**Note:** The adjustment of the mechanism block is unnecessary after replacement.

### • How to replace the head block

The head and pinch roller are supplied together in the head block. The pinch roller is also supplied separately.

#### Preparation procedure

The head block for replacement is not supplied with a holder as shown in the figure below. Therefore, remove the holder from the block to be repaired and mount it to the new head block. Then, proceed to replace the head block. (Refer to the “PROCEDURES FOR DISASSEMBLY OF THE MAIN PARTS ON THE MECHANISM”.)

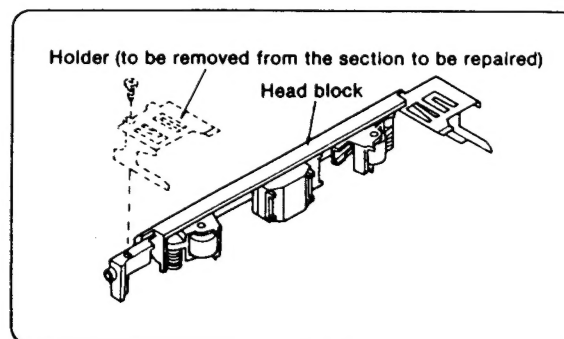


Fig. 3

**Note:** Head azimuth adjustment is unnecessary.



## PROCEDURES FOR DISASSEMBLY OF THE MAIN PARTS ON THE MECHANISM

### • How to remove the mechanism

Follow the procedures in Ref. Nos. 1~7 in the Disassembly Instructions. (See pages 6 and 7.)

※ After replacing the parts, refer to the notes for assembly. (See pages 8, 9.)

### • How to remove the head block and pinch roller

1. Follow the procedures in Ref. Nos. 1 and 6 in the Disassembly Instructions, remove the cabinet ass'y and cassette lid ass'y.  
(See pages 6 and 7.)

2. Unsolder the head FPC. (7 points.)  
(See Fig. 4.)

(See Fig. 4.)

3. Remove 2 screws (①, ②) in order to remove the head block. (See Fig. 5.)

4. Remove 2 washers. (See Fig. 6.)

5. Remove 2 springs in order to remove the pinch rollers. (See Fig. 7.)

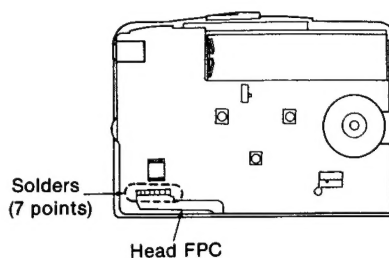


Fig. 4

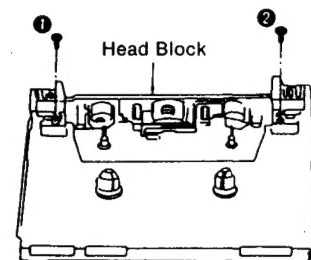


Fig. 5

### • How to remove the motor and belt

1. Follow the procedures in Ref. Nos. 1, 2 and 6 in the Disassembly Instructions.  
(See pages 6 and 7.)

2. Remove 2 screws (①~②). (See Fig. 8.)

3. Remove the motor in the direction of the arrow. (See Fig. 9.)

4. Remove the coil P.C.B. from the motor.  
(See Fig. 10.)

5. Remove the belt from the motor.  
(See Fig. 10.)

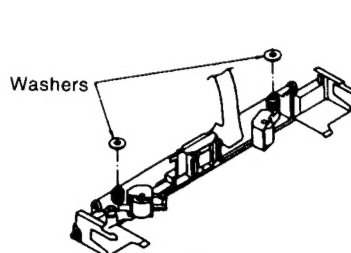


Fig. 6

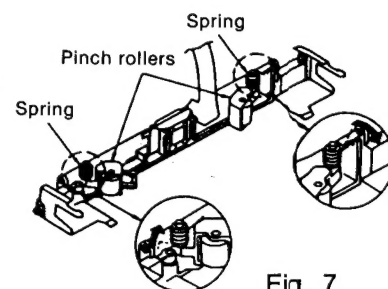


Fig. 7

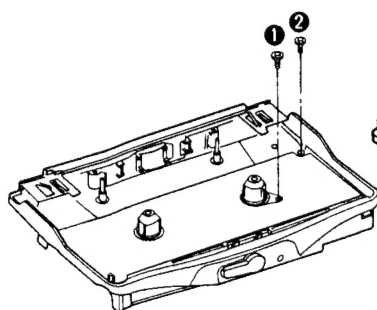


Fig. 8

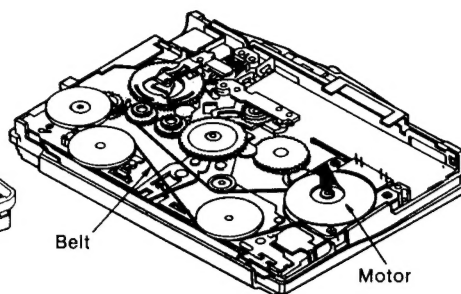


Fig. 9

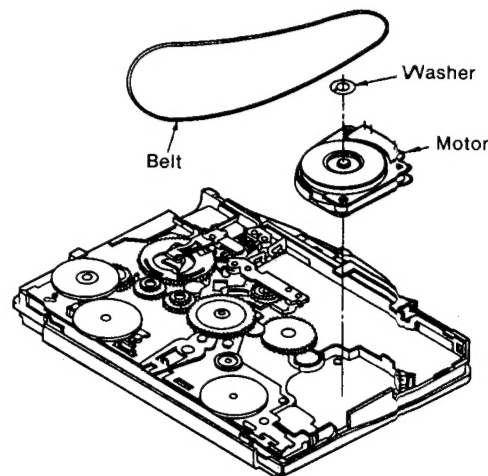


Fig. 10

- When install the belt to motor, push up the motor by insert the non-magnetic material sheet between bottom of the motor and the chassis, and install the belt between top of the motor and the coil P.C.B. (See Fig. 11, 12)

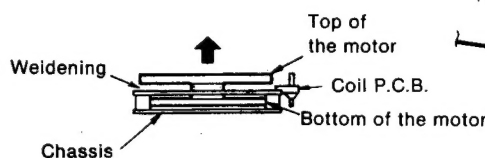


Fig. 11

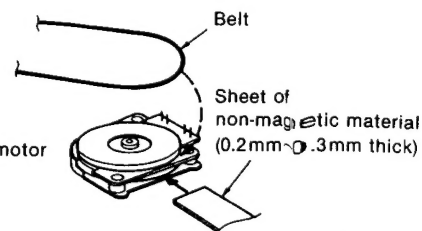
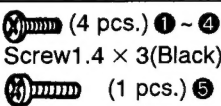
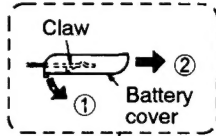
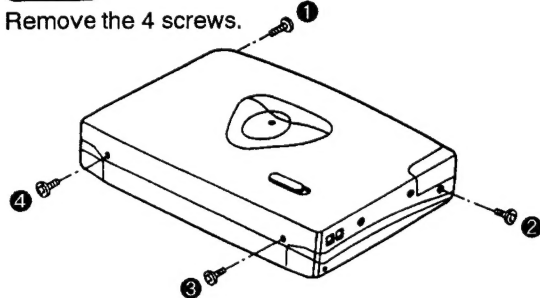
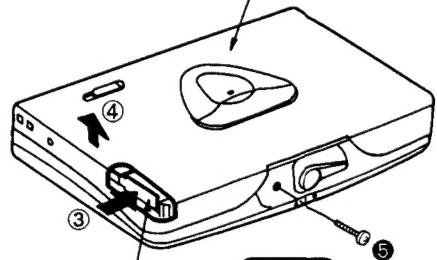
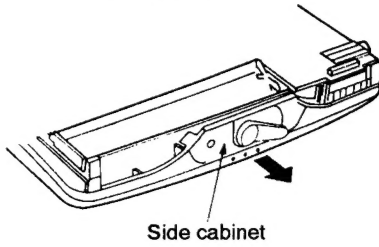
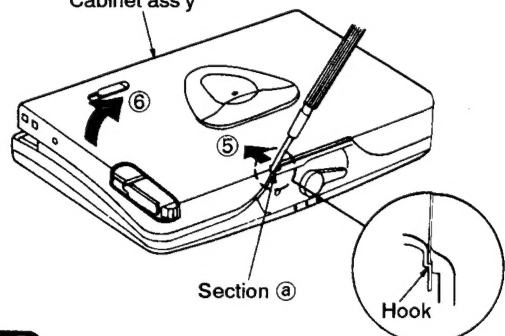
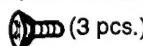
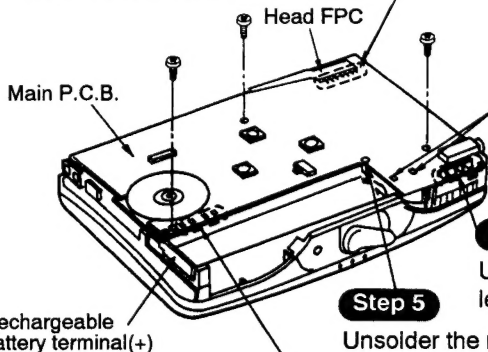
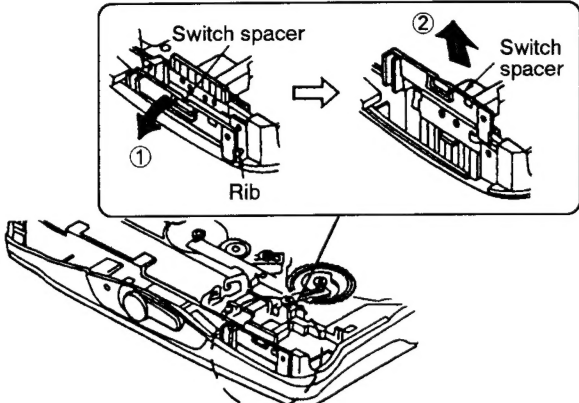
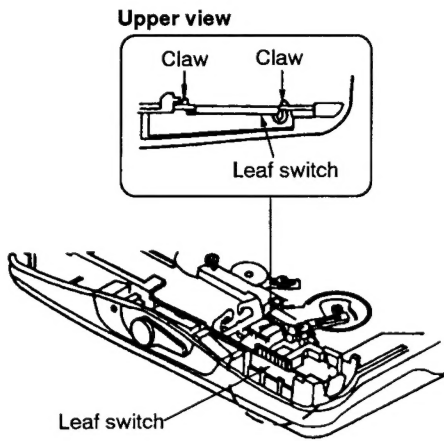
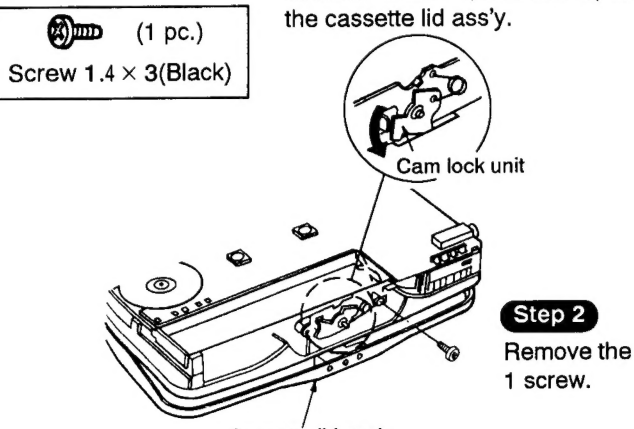
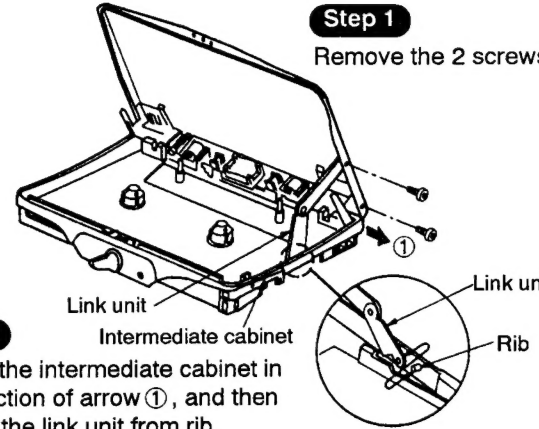
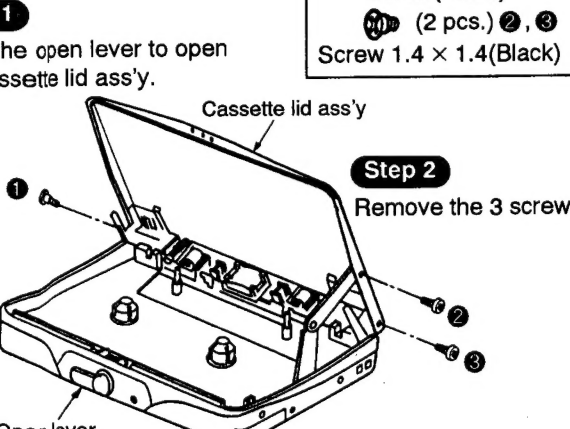
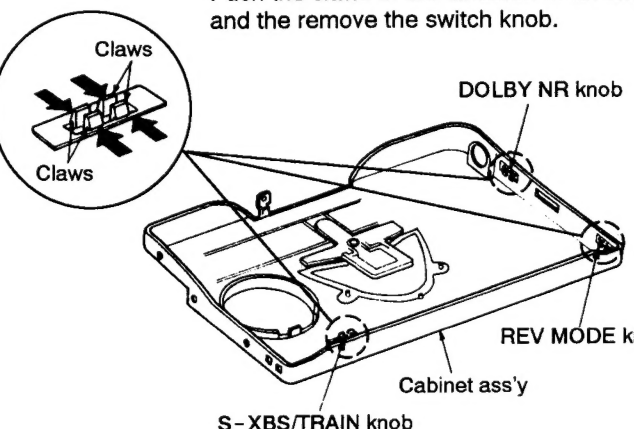
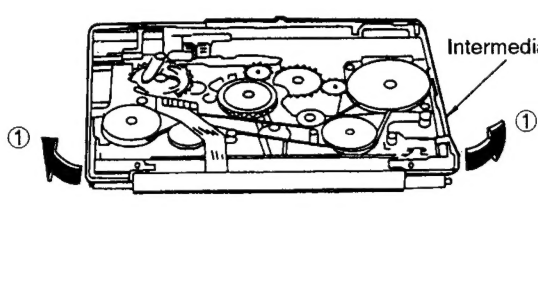
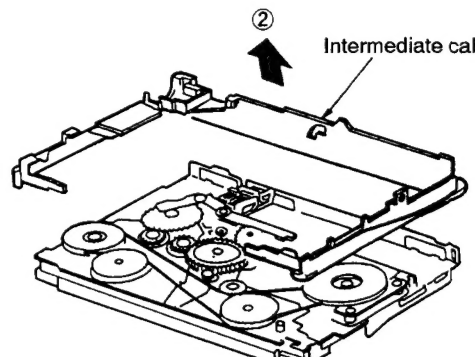
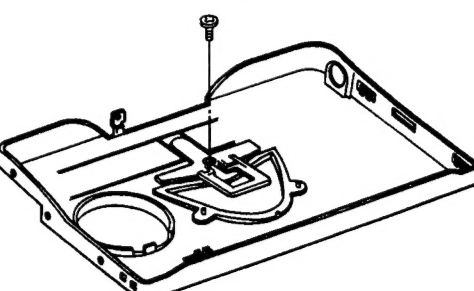
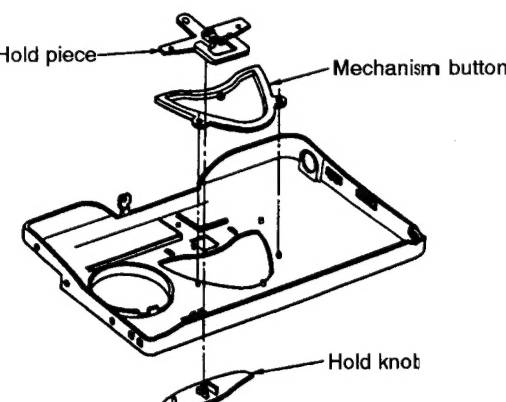


Fig. 12

## DISASSEMBLY INSTRUCTIONS

|                           |  |
|---------------------------|--|
| <b>Ref.No.</b><br>1       | <b>Removal of the cabinet ass'y</b>  |
| <b>Procedure</b><br>1     | <div data-bbox="346 338 633 479">  <p>(4 pcs.) ① ~ ④<br/>Screw 1.4 × 3 (Black)<br/>(1 pcs.) ⑤<br/>Tapping screw 1.4 × 5</p> </div> <div data-bbox="655 338 1094 465"> <p><b>Step 2</b><br/>Disengage battery cover in the direction of arrow ①, and then remove the battery cover in the direction of arrow ②.</p>  </div> <div data-bbox="1114 338 1535 495"> <p><b>Step 4</b><br/>Pushing the rechargeable battery terminal(+) in the direction of arrow ③, lift the cabinet ass'y in the direction of arrow ④.</p> </div> <div data-bbox="174 479 711 815"> <p><b>Step 1</b><br/>Remove the 4 screws.</p>  </div> <div data-bbox="1016 501 1535 815"> <p><b>Step 3</b><br/>Remove the 1 screw.</p>  </div>   |
| <b>Ref.No.</b><br>2       | <b>Removal of the side cabinet</b>   |
| <b>Procedure</b><br>1 → 2 | <div data-bbox="326 1025 671 1375"> <p><b>Step 1</b><br/>Remove the side cabinet in the direction of arrow.</p>  <p>Side cabinet</p> </div> <div data-bbox="942 927 1444 1285"> <p><b>Step 5</b><br/>Insert the minus screwdriver into the section ⑧, and then remove the cabinet ass'y in the direction of arrow ⑥ with pushing the hook in the direction of arrow ⑤.</p>  <p>Section ⑧<br/>Hook</p> </div>   |
| <b>Ref.No.</b><br>3       | <b>Removal of the main P.C.B.</b>  |
| <b>Procedure</b><br>1 → 3 | <div data-bbox="1339 1464 1511 1563">  <p>(3 pcs.)<br/>Screw 1.4 × 3</p> </div> <div data-bbox="545 1563 790 1630"> <p><b>Step 1</b><br/>Remove the 3 screws.</p> </div> <div data-bbox="863 1532 1235 1599"> <p><b>Step 2</b><br/>Unsolder the head FPC (7 points).</p> </div> <div data-bbox="1047 1697 1495 1765"> <p><b>Step 3</b><br/>Unsolder the solenoid terminal (2 points).</p> </div> <div data-bbox="1016 1854 1433 1951"> <p><b>Step 4</b><br/>Unsolder the connection between leaf switch and main P.C.B. (4 points).</p> </div> <div data-bbox="879 1921 1480 1989"> <p><b>Step 5</b><br/>Unsolder the rechargeable battery terminal(-) (1 point).</p> </div> <div data-bbox="796 1995 1213 2063"> <p><b>Step 6</b><br/>Unsolder the motor terminal (4 points).</p> </div> <div data-bbox="545 1637 1031 1989">  </div> <div data-bbox="163 1989 758 2078"> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>When the main P.C.B. is removed, the rechargeable battery terminal(+) will also be removed.</li> </ul> </div> |

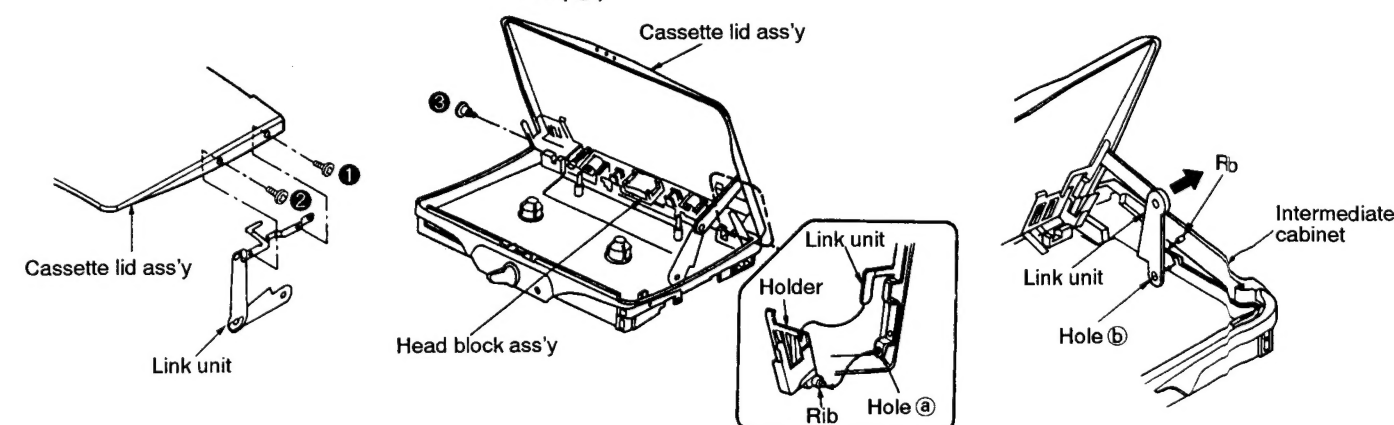
|   |  |   |
|---|--|---|
| Ref.No.<br>4  | <b>Removal of the leaf switch<br/>(Tape detect / tape selector)</b>  |   |
| Procedure<br>1 → 3 → 4  | <b>Step 1</b><br>Pull the switch spacer in the direction of arrow ① to release the rib, and then remove the switch spacer in the direction of arrow ②. | <b>Step 2</b><br>Release the 2 claws of leaf switch, and then remove the leaf switch. |
|    |  |    |
| Ref.No.<br>5  | <b>Removal of the cam lock unit</b>  | Ref.No.<br>6  |
| Procedure<br>1 → 2 → 5  | <b>Step 1</b><br>Push the cam lock unit in the direction of arrow, and then open the cassette lid ass'y.   | <b>Procedure</b><br>1 → 6   |
|   |  |   |
| Ref.No.<br>7  | <b>Removal of the cassette lid ass'y</b>   | Ref.No.<br>8  |
| Procedure<br>7  | <b>Step 1</b><br>Push the open lever to open the cassette lid ass'y.   | <b>Procedure</b><br>1 → 8   |
|  |  |   |

|  |   |   |
|--|---|---|
| Ref.No.<br>9   | <b>Removal of the intermediate cabinet</b>                                    |   |
| Procedure<br>1 → 2 → 3 → 4<br>→ 5 → 6 → 7 → 9  | <b>Step 1</b><br>Spread the intermediate cabinet in the direction of arrow ①. | <b>Step 2</b><br>Lift up the intermediate cabinet in the direction of arrow ② while spreading the intermediate cabinet. |
|   |   |                                      |
| Ref.No.<br>10  | <b>Removal of the hold piece, hold knob, mechanism button</b>                 |   |
| Procedure<br>1 → 10  | <b>Step 1</b><br>Remove the 1 screw.  | <b>Step 2</b><br>Remove the screw so that the hold piece, hold knob and mechanism button will be removed.               |
|  |   |                                     |

## NOTICE FOR ASSEMBLING

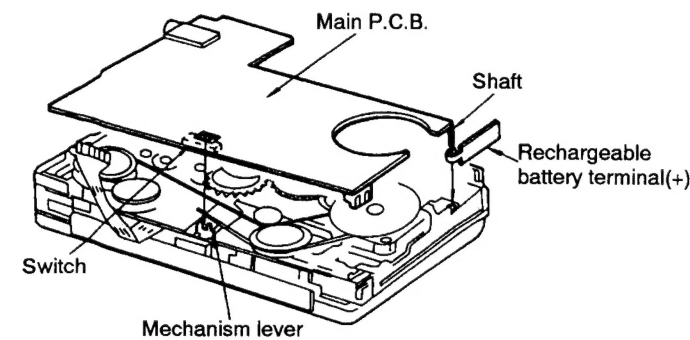
### ■ Notice assembling the cassette lid ass'y and link unit

1. Attach the link unit to the cassette lid ass'y.
2. Tighten 2 screws (①, ②).
3. Attach the link unit to the holder of head block ass'y, and then align the rib with the hole ③ of link unit.
4. Install the cassette lid ass'y to the head block, and then tighten the screw (③).
5. Slide the intermediate cabinet in the direction of arrow, and then align the hole ④ of link unit with rib of intermediate cabinet.



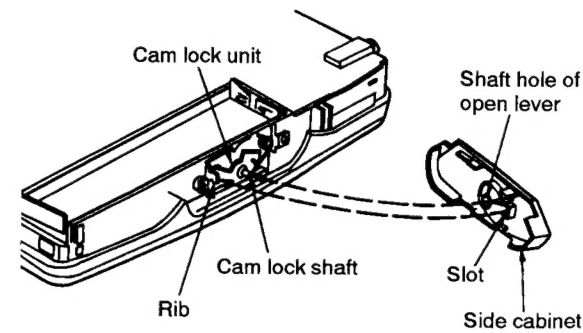
### ■ Notice for assembling the main P.C.B.

Ensure the boss of switch mates the mechanism lever. Insert the shaft into the rechargeable battery terminal(+), and the install the main P.C.B.

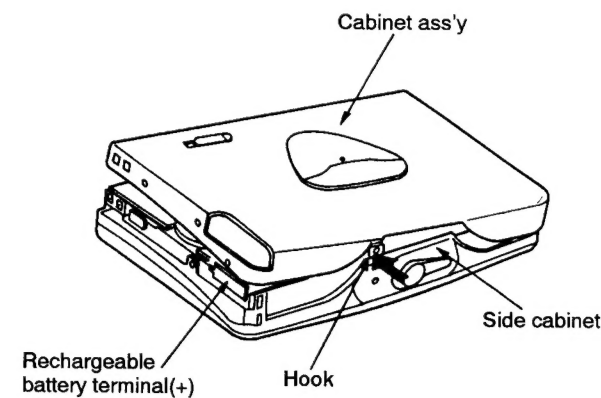
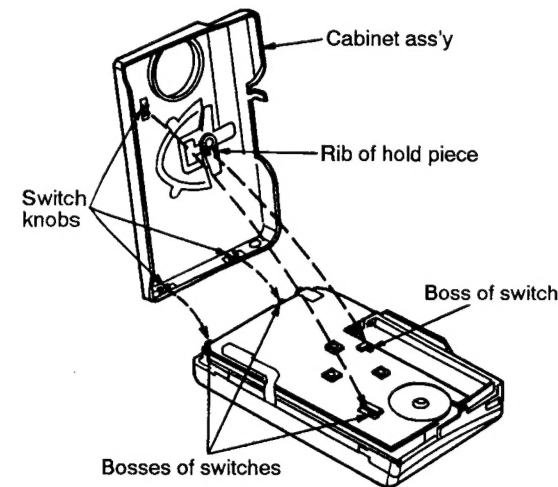


### ■ Notice for assembling the side cabinet

1. Align the cam lock shaft with the shaft hole of open lever.
2. Align the rib of cam lock unit with the slot of side cabinet.



### ■ Notice for installing the knobs and assembling the cabinet ass'y



1. Make sure the bosses of the switch are fit in the knobs of the switch when assembling(3 points).
2. Make sure the boss of the switch are fit in the rib of the hold piece(1 point).

**Note:** Before installing the switch knob, be sure to check the claws for defects that would render the claws unserviceable.  
(If a white line like white wax on a claw is found, the claw may be broken when installing the switch knob.)

3. Install the cabinet ass'y with pushing inward the rechargeable battery terminal(+).

#### ■ Note:

- Push the hook of cabinet ass'y in the direction of arrow, and then put it into the insides of side cabinet.
- Make sure the cabinet ass'y is installed completely and the knobs can be operated after assembled.

## ■ MEASUREMENTS AND ADJUSTMENTS

### ● ADJUSTMENT INSTRUCTIONS

#### READ CAREFULLY BEFORE ATTEMPTING ADJUSTMENTS

1. Set volume control to maximum.
2. Set Dolby NR Switch to OFF.
3. Release the hold state. (Refer to page 2)
4. Set power source voltage to 1.5V DC.

### ● CONTROL POSITIONS AND EQUIPMENT USED

1. Frequency counter

### ● TAPE SECTION

| ITEM                  | TEST TAPE             | MEASUREMENT POINT  | ADJUSTMENT POINT        | PROCEDURE  |
|-----------------------|-----------------------|--|-------------------------|--|
| Tape speed adjustment | QZZCWAT (3kHz, -10dB) | Connect the frequency counter to Headphones jack (16Ω) (Refer to Fig. 1) | VR301 (Refer to Fig. 2) | Playback the central part of the tape and adjust VR301 so that the tape speed is as follows.<br>Forward: 2990±10Hz<br>Reverse: 2940~3050Hz<br>Make sure that the frequency range in within ±60Hz for between "Forward" and "Reverse" mode. |

**Note:** The playback head is supplied on the head arm assembly. (See the Mechanism parts location on page 18.)  
The assembly requires no adjustment.

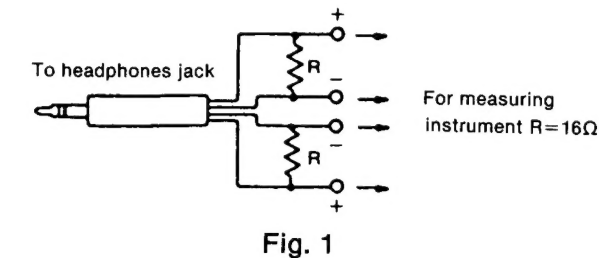


Fig. 1

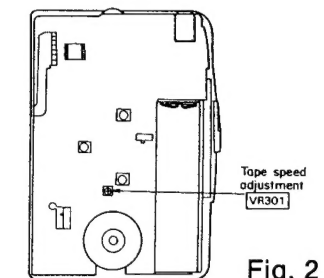


Fig. 2

## ■ TERMINAL FUNCTION OF IC

### ● IC6 (TB2004FN006E): MECHANISM CONTROL

| Pin No. | Mark   | I/O Division | Function  | Pin No. | Mark       | I/O Division | Function   |
|---------|--------|--------------|---|---------|------------|--------------|--|
| 1       | GND    | —            | GND terminal  | 11      | PLAY CHECK | I            | Inputs the mechanism status detection signal (FWD/REV) At high: FWD At low: REV  |
| 2       | OSC    | I/O          | System clock terminal fosc=3.2kHz   | 12      | REV MODE   | I            | Inputs the reverse mode switching signal. At low: ⇄ mode At high: ⇄ mode         |
| 3       | CL     | I            | Clear terminal  | 13      | SP         | O            | Outputs the motor speed i p signal.  |
| 4       | LID    | I            | Detection signal whether the cassette tape is inserted.   | 14      | OP-H       | O            | Outputs the motor speed i p signal and the mode signal.                          |
| 5       | REM    | I            | Inputs the remote control signal.   | 15      | CCW        | O            | Outputs the reversing motor drive control signal.                                |
| 6       | PLAY   | I            | Inputs the mechanism operation signal (PLAY) At high: PLAY  | 16      | MUTE       | O            | Outputs the amp. muting i gnal.  |
| 7       | TPS    | I            | Inputs the mechanism operation signal (STOP) At high: STOP  | 17      | FF-L       | O            | Outputs the LED for battery lit drive signal. At low: LED lit (Not used, p pen.) |
| 8       | FF     | I            | Inputs the mechanism operation signal (FF) At high: FF  | 18      | SOL        | O            | Outputs the solenoid drive signal.   |
| 9       | REW    | I            | Inputs the mechanism operation signal (REW) At high: REW  | 19      | OP-L       | O            | Outputs the power switching signal.  |
| 10      | T. END | I            | Inputs the signal for the detection of tape rotation. When the pulse signal is input: The current mode remains set as the tape is rotating. No pulse signal: Stops or starts reverse palyback as the tape has stopped rotating (ie, reached the end). | 20      | PEE        | O            | Outputs the confirming be p when remote control.                                 |
|         |        |              |   | 21      | REV-L      | O            | Outputs the LED for operation indicator lit drive signal.                        |
|         |        |              |   | 22      | VDD        | I            | Power supply terminal  |
|         |        |              |   | 23      | CONT       | O            | Outputs the DC-DC converter drive signal.  |
|         |        |              |   | 24      | VCC        | I            | Power supply terminal  |



## HOW TO CHECK OPERATIONS DURING DISASSEMBLY AND SERVICING

- Check operations during disassembly following the steps.
  - 1) Set the condition as shown in Fig. 1 in accordance with Disassembly Instructions. (DO NOT remove the solders on the head FPC.)
  - 2) Connect the PCB and motor with the extension cord (RFKZ0002).
  - 3) Solder the shortland with a lead wire and then short-circuit them.
    - Short-circuit the short land ①. (Motor power: ON)
    - Short-circuit the short land ②. (Microcomputer: reset)
    - Short-circuit the short land ③. (Power: ON)
    - Short-circuit the short land ④. (Tape in/out SW: ON)
- Note:** See next page for the points to be short-circuited.
- 4) Connect the rechargeable battery (+) terminal and the rechargeable battery (-) terminal foil to the power source (DC 1.5V) with a lead wire. (Fig. 1)
- 5) Connect the rechargeable battery (-) terminal foil and the rechargeable battery (-) terminal with a lead wire (mechanism earth).
- 6) Manually operate the plunger arm when checking the PLAY/STOP operation.
  - Manually pulling the plunger arm once sets the FWD mode; twice, REV; and, three times, STOP.

### Notes:

- Operate the plunger arm manually. Even if the operation buttons are pressed, the plunger will not be actuated.
- Even if the mechanism unit is switched to the FWD mode in Step 6, the head change-over switch (IC1) will remain in the REV position, so set the REV mode to check the audio.
- Before checking the operation problems and adjustments, be sure to release the hold state. (Refer to page 2)
- After checking, unsolder the short land ①, ②, ③ and ④.

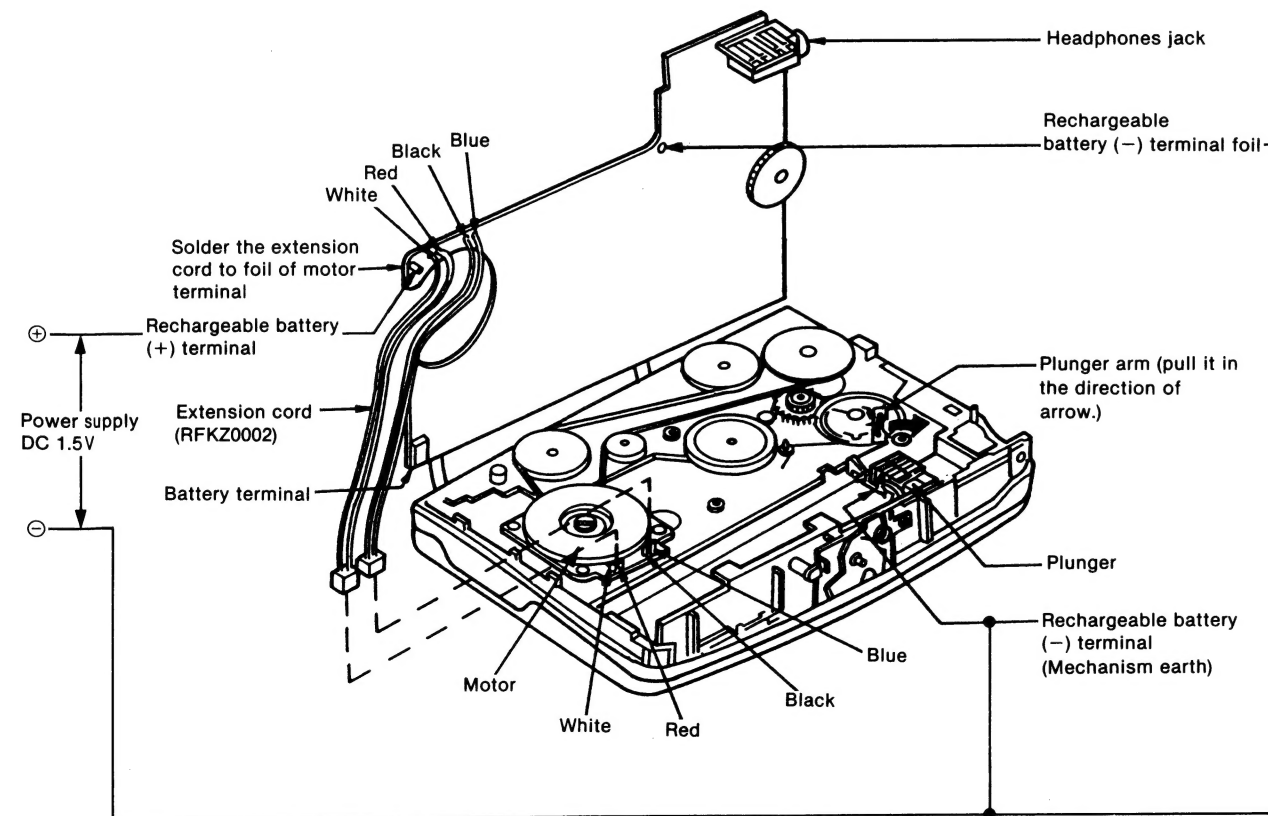
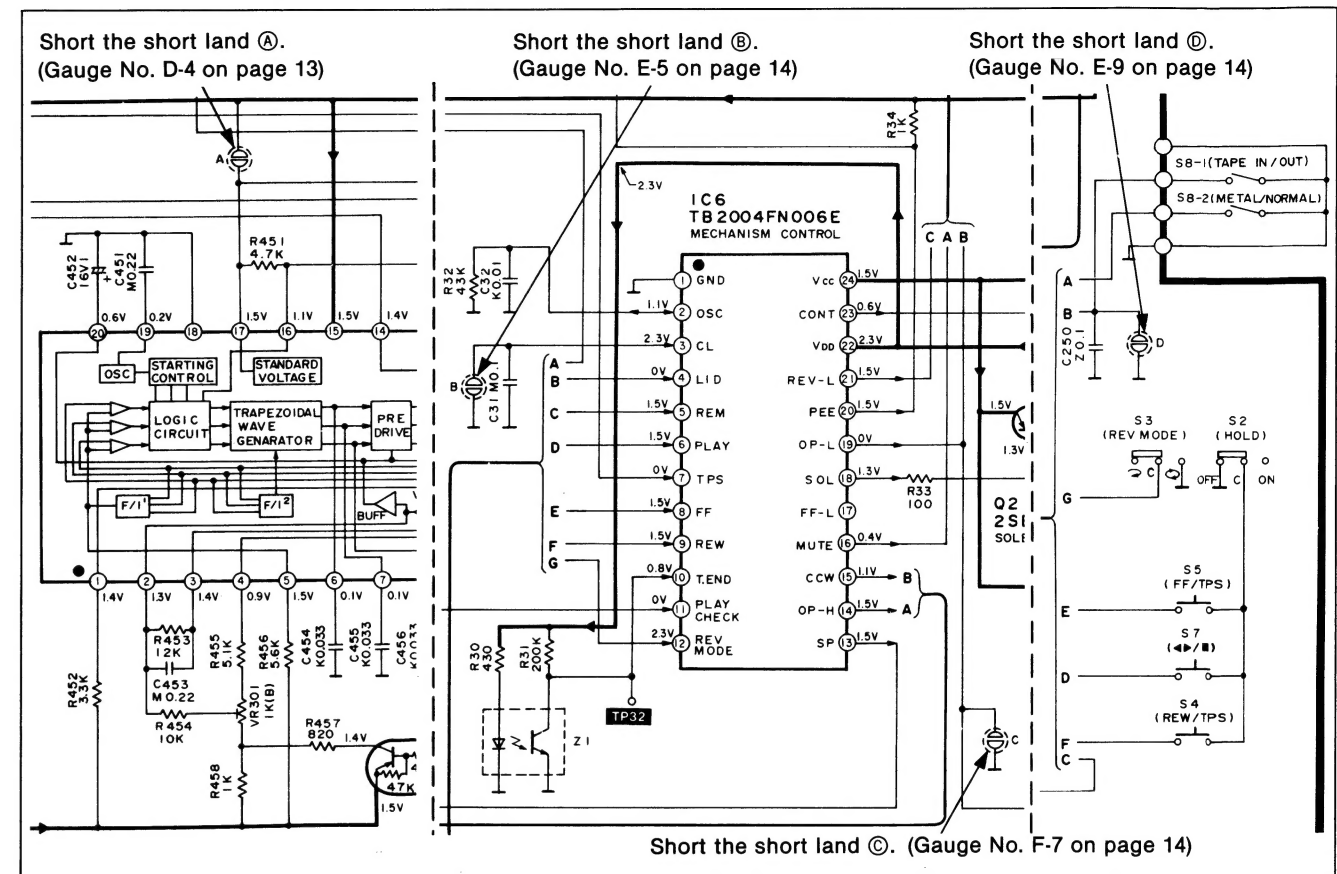


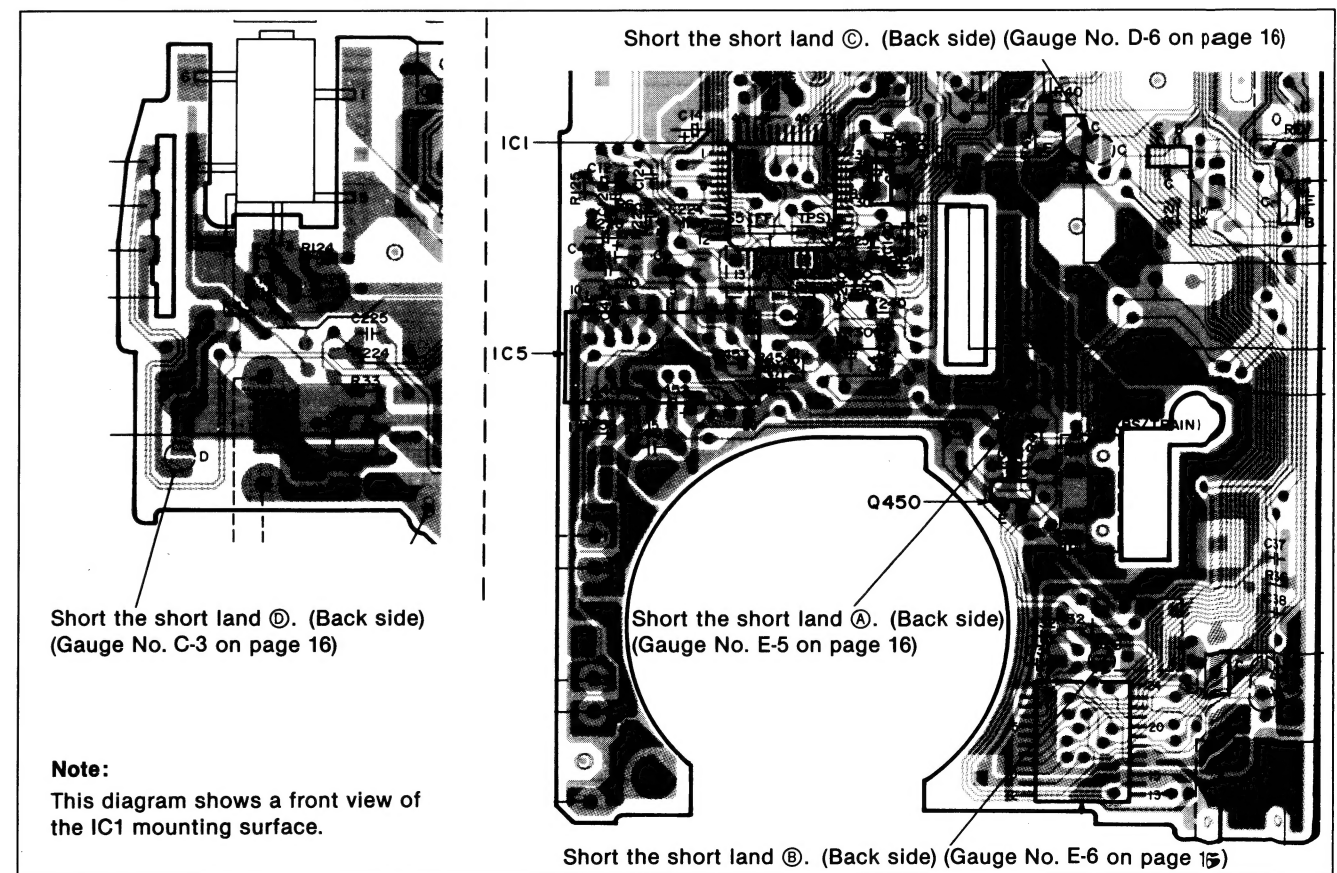
Fig. 1

### • Short-circuit points

#### SCHEMATIC DIAGRAM (A MAIN CIRCUIT)



#### PRINTED CIRCUIT BOARD (A MAIN P.C.B.)



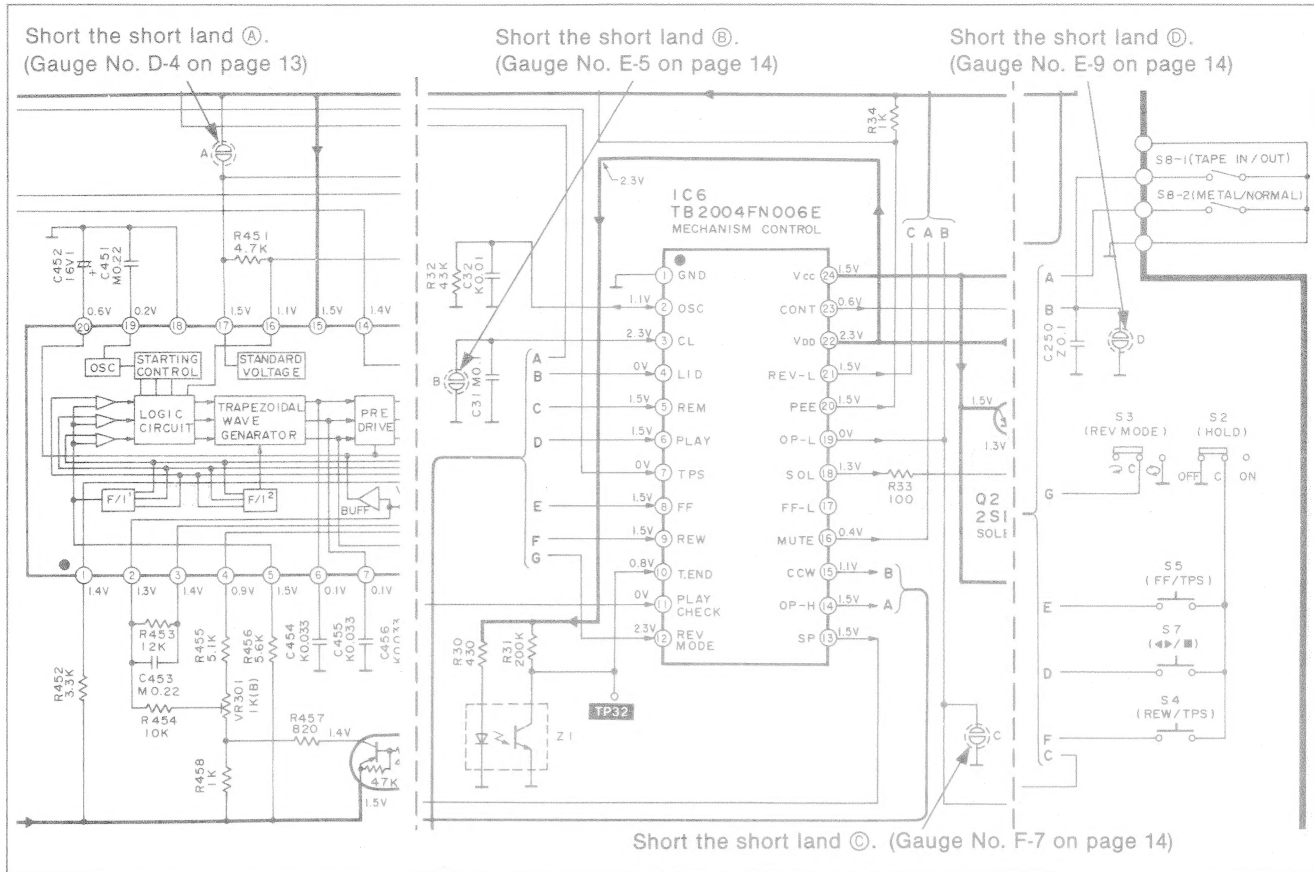
### Note:

This diagram shows a front view of the IC1 mounting surface.

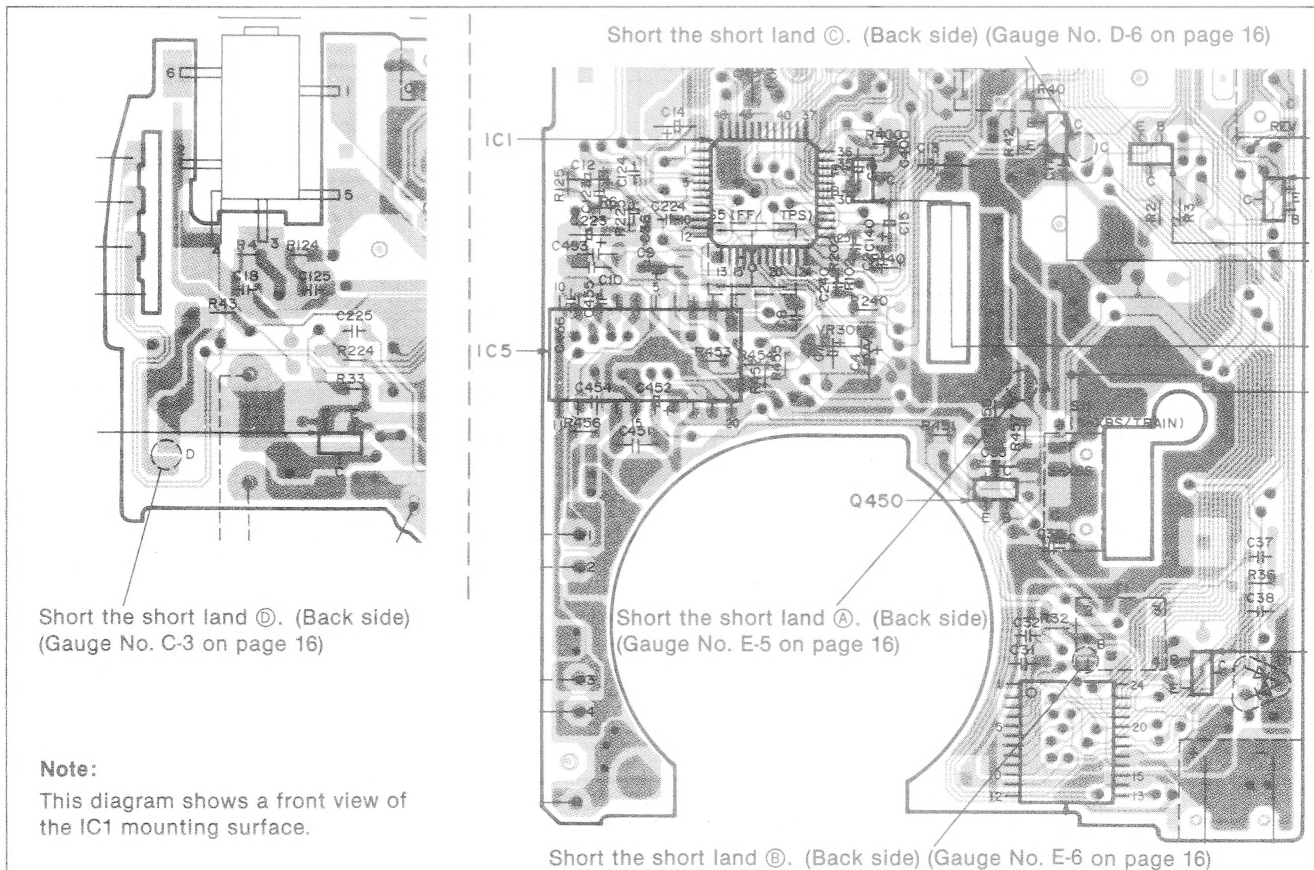


## • Short-circuit points

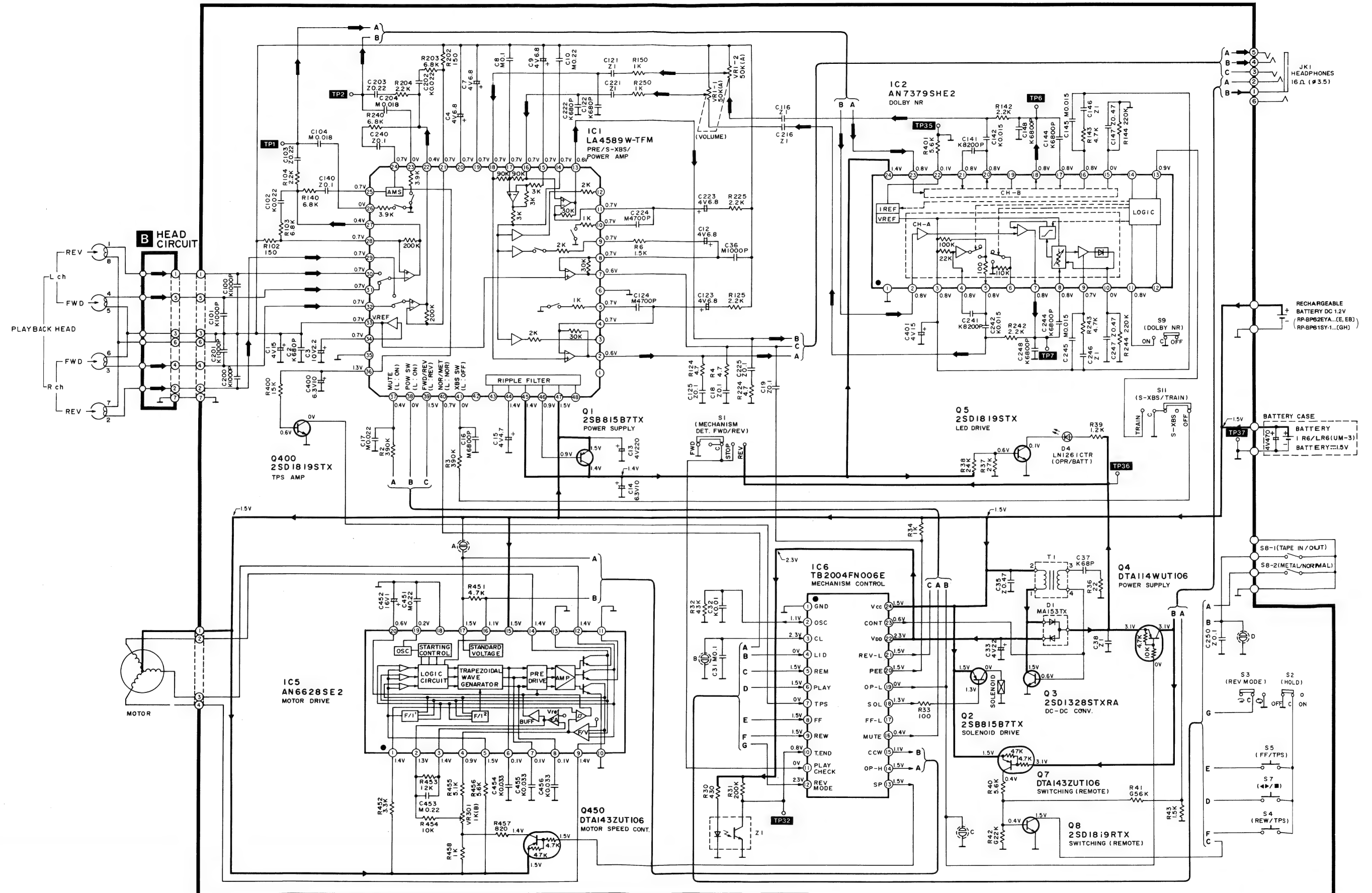
## SCHEMATIC DIAGRAM (A MAIN CIRCUIT)



## PRINTED CIRCUIT BOARD (A MAIN P.C.B.)



A MAIN CIRCUIT (PRE AMP/S-XBS/POWER AMP/DOLBY NR/MOTOR DRIVE/MECHANISM CONTROL/DC-DC CONVERTER)



## SCHEMATIC DIAGRAM

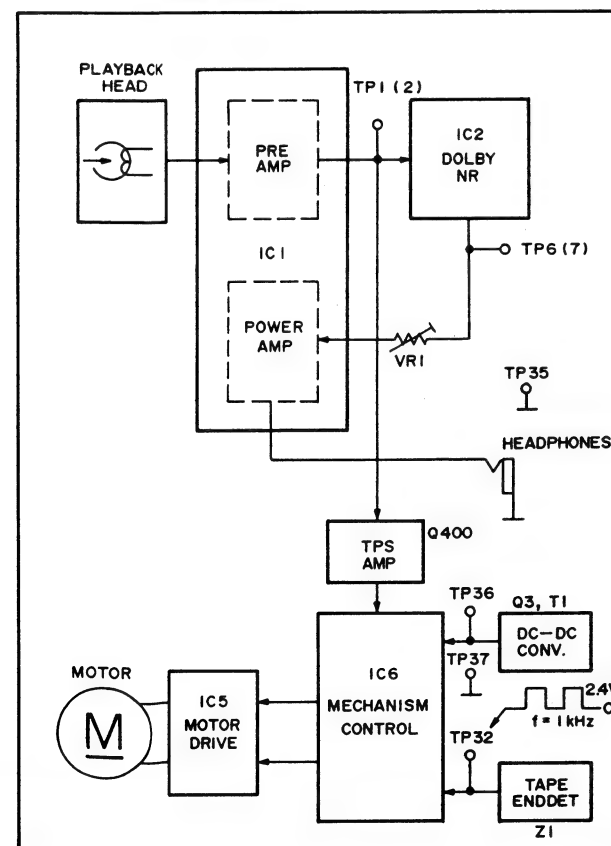
(See parts list on pages 20, 21.)

(This schematic diagram may be modified at any time with development of new technology.)

### Notes:

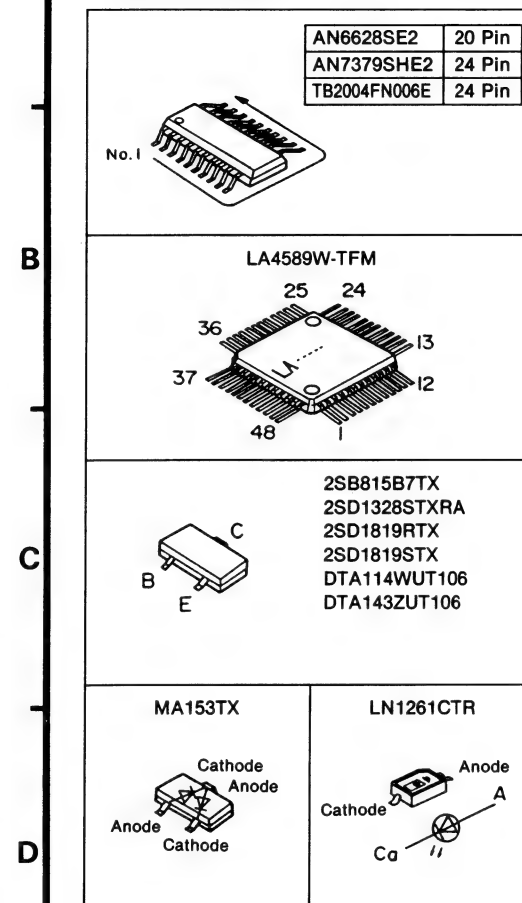
- **S1** : FWD/REV switch in "FWD" position.
  - **S2** : Hold (HOLD) switch in "OFF" position.
  - **S3** : Reverse mode selector in "↺" position.  
(↺/ON • ↻/OFF)
  - **S4, 5, 7** : Operation switches.  
(S4: REW, S5: FF, S7: PLAY/STOP)
  - **S8-1** : Tape detector (OPEN/CLOSE) switch in "OPEN" position.
  - **S8-2** : Tape selector switch in "OFF (METAL)" position.  
(ON: NORMAL, OFF: METAL)
  - **S9** : Dolby noise reduction (DOLBY NR) switch in "OFF" position.
  - **S11** : Tone (S-XBS, TRAIN) switch in "OFF" position.  
(OFF ↔ S-XBS ↔ TRAIN)
  - **VR1** : Volume adjustment.
  - **VR301** : Tape speed adjustment.
  - DC voltage measurements are taken with electronics voltmeter from negative terminal of battery.  
No mark...Playback.
- Volume VR  $\left[ \begin{array}{l} \text{MAX} \dots 180\text{mA} \\ \text{MIN} \dots 160\text{mA} \end{array} \right]$
- Signal line  
 : +B line, : Playback signal.

### BLOCK DIAGRAM



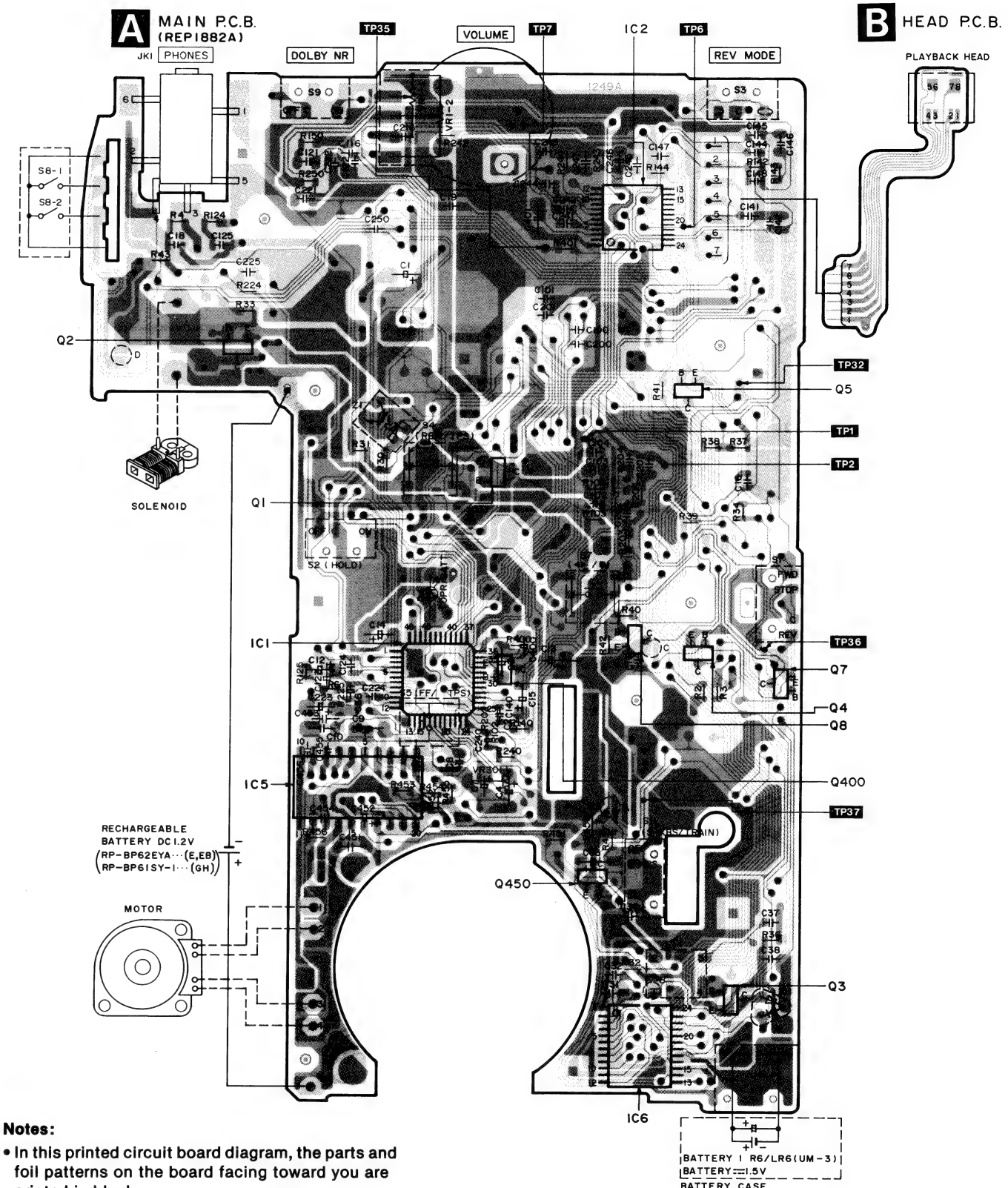
## PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

### • Terminal guide of IC's, transistors and diodes



### • CHECK POINT OF SIGNAL

| CHECK ITEM                          |              | TEST POINT  |
|-------------------------------------|--------------|-------------|
| HEAD → PRE OUTPUT                   | Lch          | TP1         |
|                                     | Rch          | TP2         |
|                                     | GND          | TP35        |
| PRE OUTPUT → DOLBY NR OUTPUT        | Lch          | TP6         |
|                                     | Rch          | TP7         |
|                                     | GND          | TP35        |
| DOLBY NR OUTPUT → VR INPUT          | Lch          | VR TERMINAL |
|                                     | Rch          | VR TERMINAL |
|                                     | COM          | VR TERMINAL |
| VR INPUT → VR OUTPUT                | Lch          | VR TERMINAL |
|                                     | Rch          | VR TERMINAL |
|                                     | COM          | VR TERMINAL |
| POWER AMP OUTPUT → HEADPHONE OUTPUT | Lch          | HP TERMINAL |
|                                     | Rch          | HP TERMINAL |
|                                     | COM          | HP TERMINAL |
| DC-DC CONVERTER (BOOSTER)           | 2.4V OUTPUT  | TP36        |
|                                     | GND          | TP37        |
| PHOTO COUPLER (END)                 | PULSE OUTPUT | TP32        |



### Notes:

- In this printed circuit board diagram, the parts and foil patterns on the board facing toward you are printed in black.  
The opposite side is printed in blue.
- The "•" mark denotes the connection points of double-faced foil patterns (through holes) on both side of the printed circuit board.
- This printed circuit board diagram may be modified at any time with the development of new technology.



## SCHEMATIC DIAGRAM

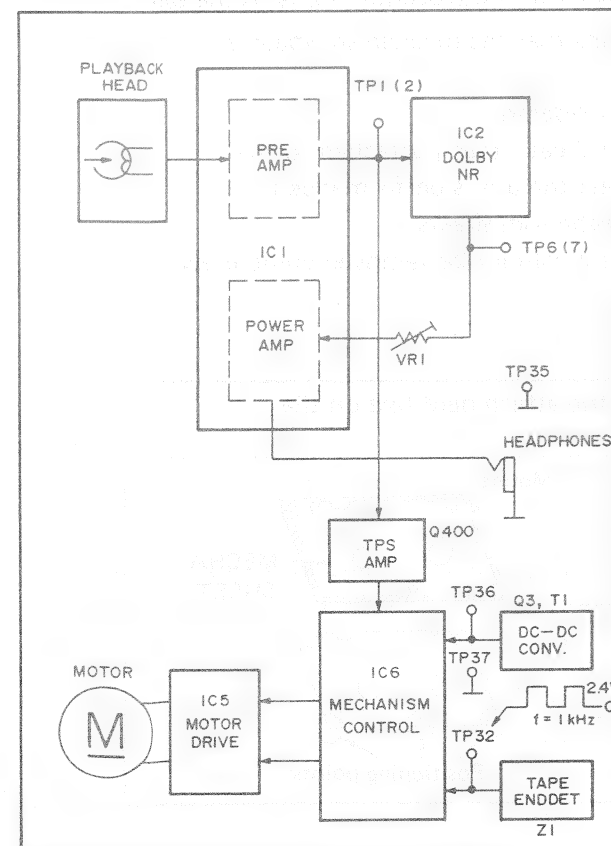
(See parts list on pages 20, 21.)

(This schematic diagram may be modified at any time with development of new technology.)

### Notes:

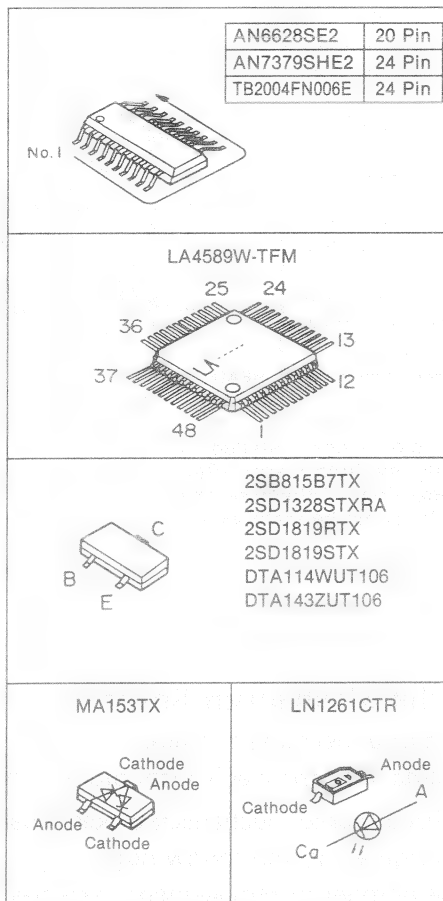
- **S1** : FWD/REV switch in "FWD" position.
  - **S2** : Hold (HOLD) switch in "OFF" position.
  - **S3** : Reverse mode selector in "↺" position.  
(↺/ON • ↻/OFF)
  - **S4, 5, 7** : Operation switches.  
(S4: REW, S5: FF, S7: PLAY/STOP)
  - **S8-1** : Tape detector (OPEN/CLOSE) switch in "OPEN" position.
  - **S8-2** : Tape selector switch in "OFF (METAL)" position.  
(ON: NORMAL, OFF: METAL)
  - **S9** : Dolby noise reduction (DOLBY NR) switch in "OFF" position.
  - **S11** : Tone (S-XBS, TRAIN) switch in "OFF" position.  
(OFF → S-XBS → TRAIN)
  - **VR1** : Volume adjustment.
  - **VR301** : Tape speed adjustment.
  - DC voltage measurements are taken with electronics voltmeter from negative terminal of battery.  
No mark...Playback.
- Volume VR  $\left[ \begin{array}{l} \text{MAX...180mA} \\ \text{MIN...160mA} \end{array} \right]$
- Signal line  
 : +B line, : Playback signal.

### BLOCK DIAGRAM



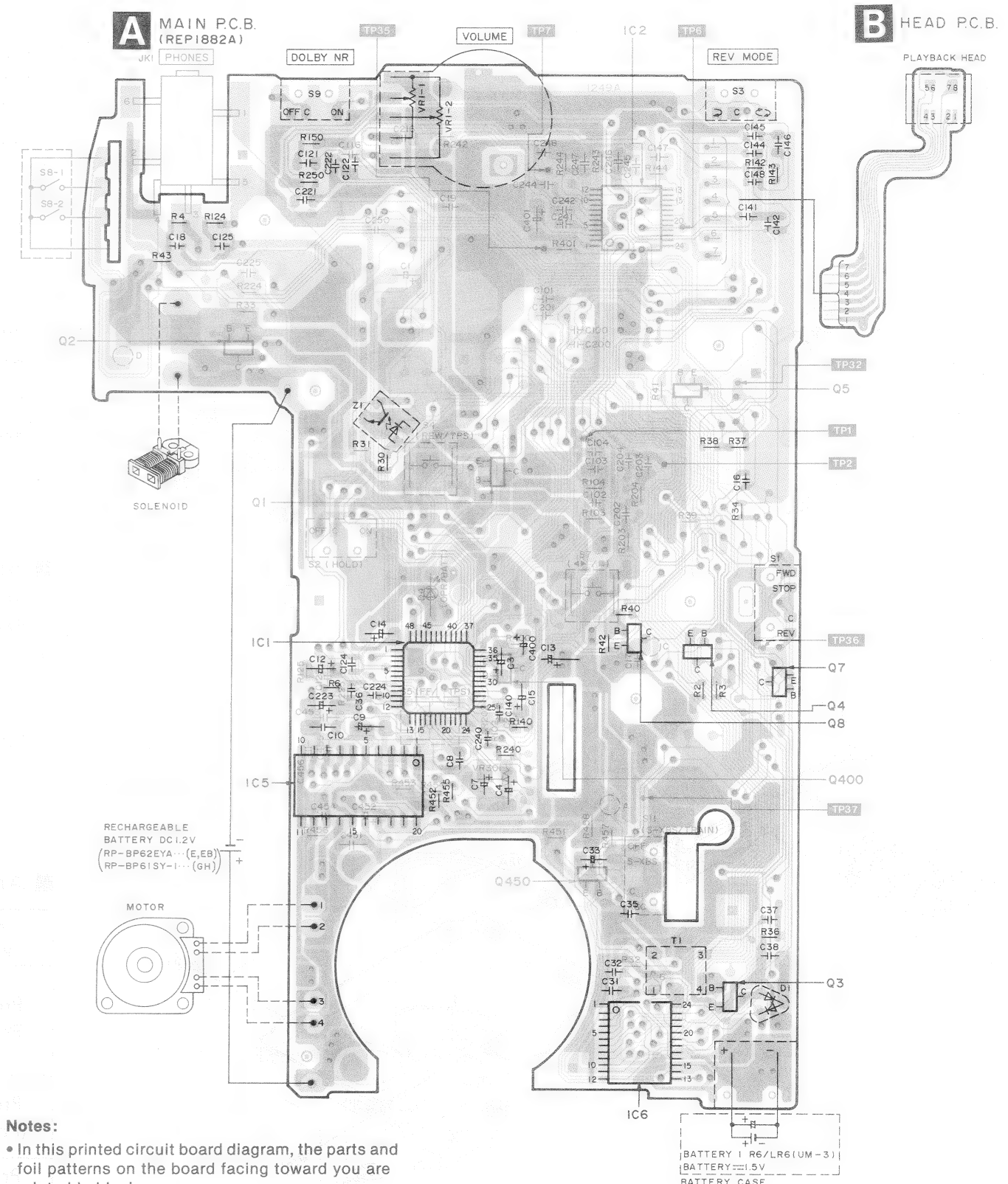
## PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

### • Terminal guide of IC's, transistors and diodes



### • CHECK POINT OF SIGNAL

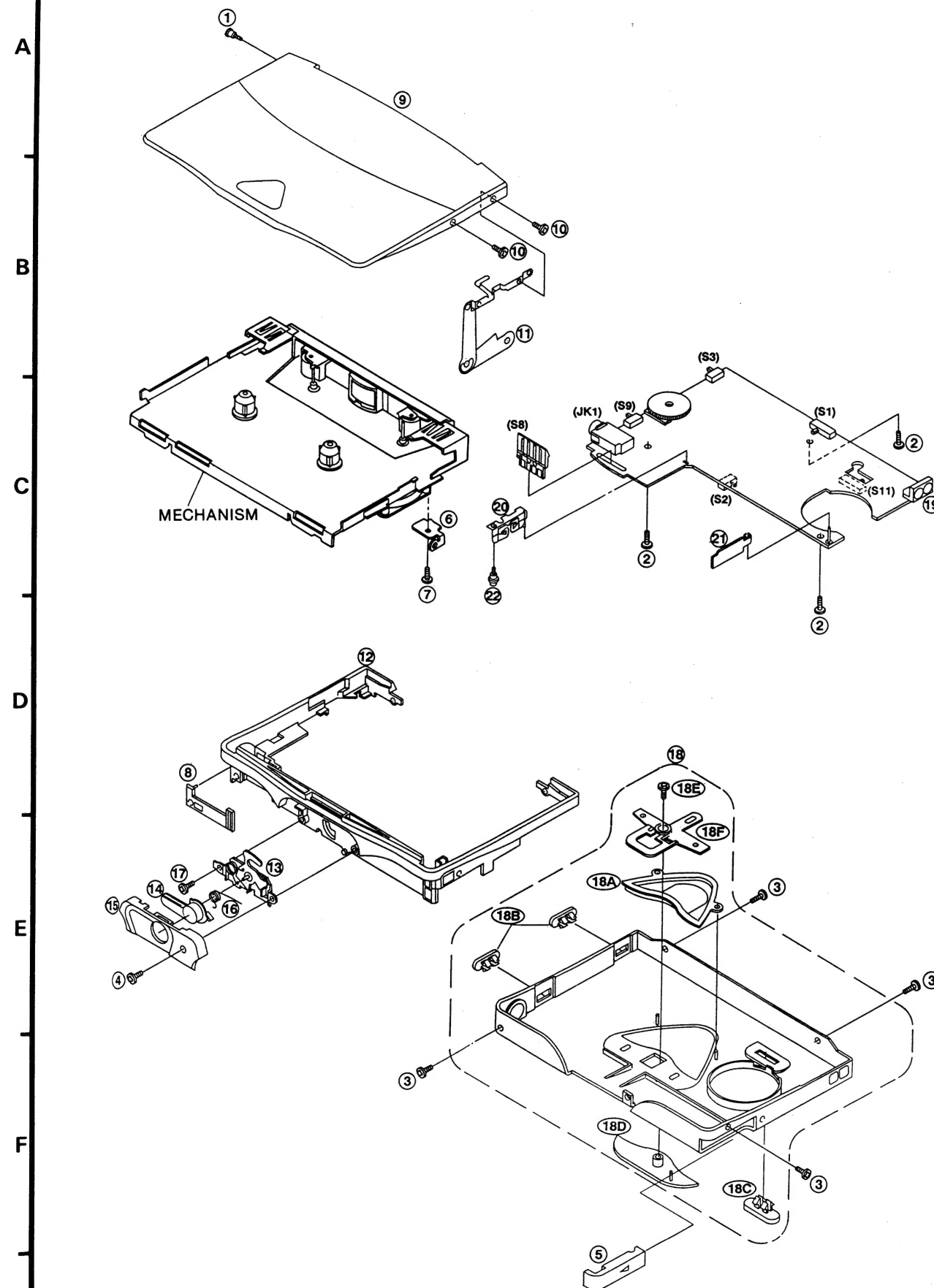
| CHECK ITEM                          | TEST POINT               |
|-------------------------------------|--------------------------|
| HEAD → PRE OUTPUT                   | Lch <b>TP1</b>           |
|                                     | Rch <b>TP2</b>           |
|                                     | GND <b>TP35</b>          |
| PRE OUTPUT → DOLBY NR OUTPUT        | Lch <b>TP6</b>           |
|                                     | Rch <b>TP7</b>           |
|                                     | GND <b>TP35</b>          |
| DOLBY NR OUTPUT → VR INPUT          | Lch VR TERMINAL          |
|                                     | Rch VR TERMINAL          |
|                                     | COM VR TERMINAL          |
| VR INPUT → VR OUTPUT                | Lch VR TERMINAL          |
|                                     | Rch VR TERMINAL          |
|                                     | COM VR TERMINAL          |
| POWER AMP OUTPUT → HEADPHONE OUTPUT | Lch HP TERMINAL          |
|                                     | Rch HP TERMINAL          |
|                                     | COM HP TERMINAL          |
| DC-DC CONVERTER (BOOSTER)           | 24V OUTPUT <b>TP36</b>   |
|                                     | GND <b>TP37</b>          |
| PHOTO COUPLER (END)                 | PULSE OUTPUT <b>TP32</b> |



### Notes:

- In this printed circuit board diagram, the parts and foil patterns on the board facing toward you are printed in black.  
The opposite side is printed in blue.
- The "•" mark denotes the connection points of double-faced foil patterns (through holes) on both side of the printed circuit board.
- This printed circuit board diagram may be modified at any time with the development of new technology.

## CABINET PARTS LOCATION



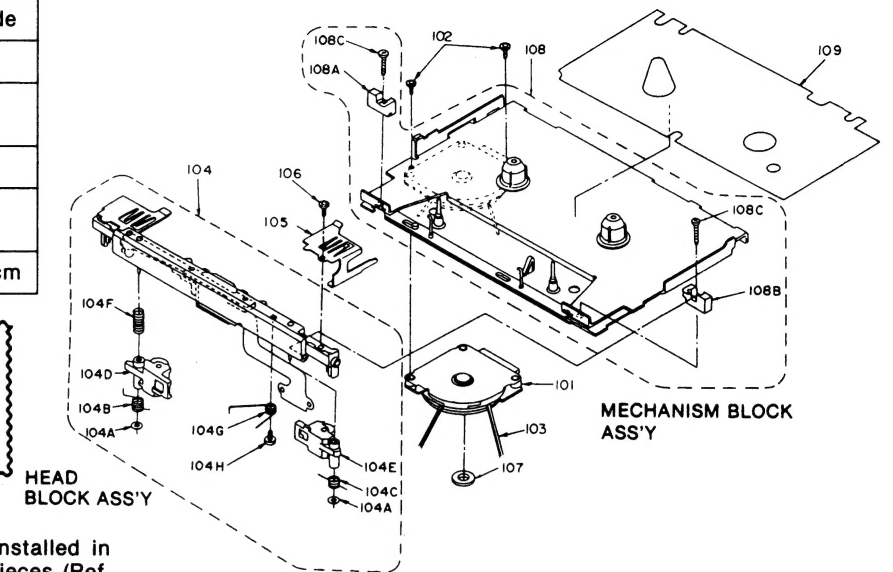
## MECHANISM PARTS LOCATION

|                          |                                      |
|--------------------------|--------------------------------------|
|                          | FWD & REV mode                       |
| Wow and flutter          | 0.3% (WRMS)                          |
| Pressure of pinch roller | 120±20g                              |
| Take-up tension          | More than 60g                        |
| Playback torque          | 20 <sup>+15</sup> <sub>-5</sub> g·cm |
| FF/REW torque            | More than 60g·cm                     |

The parts enclosed in the dotted boxes are supplied as a block assembly. Therefore, they are not supplied separately except parts indicated with Ref. No.

### Note:

\* Exchange the original hold pieces installed in the mechanism with the new hold pieces (Ref. No. 108A, 108B) when repairing. Otherwise, the head block (Ref. No. 104) cannot be installed.



## How to apply the Mechanism Sheet

- Replacing/Repairing of a mechanism block.  
Replace or repair using a shared mechanism block.(The replacing/repairing procedure remains the same.)
- If after repairing with a shared mechanism block, a user complains that the mechanism sheet is different from the original, do the following:
  - Explain that the number of replacement parts has been consolidated.
  - Attach an original mechanism sheet covering the mechanism sheet already attached to the shared mechanism block. (Doubling, doubling does not affect the unit's performance.)
    - Never attach another mechanism sheet to the doubled mechanism sheets.
    - Never remove the already attached sheet. Adhesive material cannot be removed completely.
    - Position the sheet carefully, when attaching it.

## Attaching instructions

You can attach the mechanism sheet smoothly if you position the attachment line on the side where the head is to be installed.

|                               |  |  |
|-------------------------------|--|--|
| Procedure 1:<br>(Preparation) | Peel off the sheet from mount.   |  |
| Procedure 2:<br>(Positioning) | Fit the encircled marks of an original sheet with those of sheet already attached. |  |
| Procedure 3:<br>(Attachment)  | Attach the sheet.  |  |



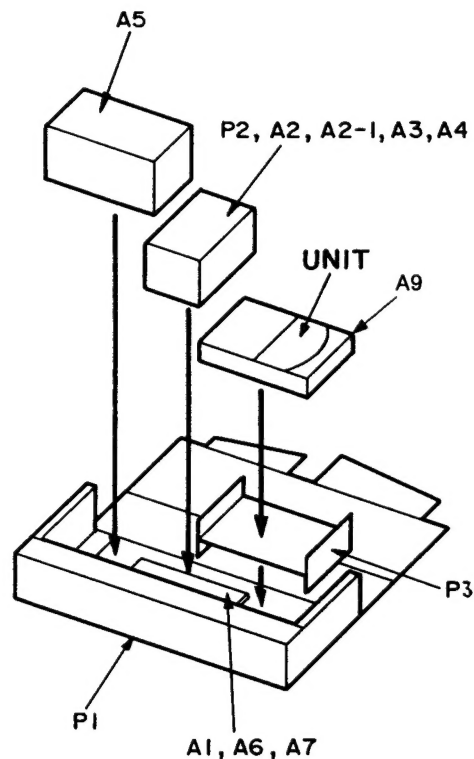
## REPLACEMENT PARTS LIST

| Ref. No. | Part No.    | Part Name & Description   | Remarks |
|----------|-------------|---------------------------|---------|
|          |             | CABINET AND CHASSIS       |         |
| 1        | RHD14036-K  | SCREW                     |         |
| 2        | RHE51192A   | SCREW                     |         |
| 3        | RHQ0002-K   | SCREW                     |         |
| 4        | RHQ0028-S   | SCREW                     |         |
| 5        | RKK0052-K1  | BATTERY COVER             |         |
| 6        | RHN20005    | NUT                       |         |
| 7        | RHQ0029-K   | SCREW                     |         |
| 8        | RMQ0355     | SWITCH SPACER             |         |
| 9        | RFKLQ530-K  | CASSETTE LID ASS'Y        |         |
| 10       | RHQ0033-K   | SCREW                     |         |
| 11       | RXM0042     | LINK UNIT                 |         |
| 12       | RKQ0132-S   | INTERMEDIATE CABINET      |         |
| 13       | RXQ0236     | CAM LOCK UNIT             |         |
| 14       | RGW0173-S   | OPEN LEVER                |         |
| 15       | RKQ0133-S   | SIDE CABINET              |         |
| 16       | RMB0300     | AUTO RETURN SPRING        |         |
| 17       | XQN14-CJ3FZ | SCREW                     |         |
| 18       | RYK0448-K   | CABINET ASS'Y             |         |
| 18A      | RGU1037-S   | MECHANISM BUTTON          |         |
| 18B      | RGV0106-K   | MODE/NR KNOB              |         |
| 18C      | RGV0110-K   | S-XBS/TRAIN KNOB          |         |
| 18D      | RGV0128-S   | HOLD KNOB                 |         |
| 18E      | RHE51192A   | SCREW                     |         |
| 18F      | RMRO764-K   | HOLD PIECE                |         |
| 19       | RJH9206     | CONNECTION TERMINAL       |         |
| 20       | RJC99004-2  | RECHARGEABLE BATT. TER(-) |         |
| 21       | RJC99003-3  | RECHARGEABLE BATT. TER(+) |         |
| 22       | RHQ0013-1   | SCREW                     |         |
|          |             | MECHANISM                 |         |
| 101      | HPX-24NB1AT | MOTOR                     |         |
| 102      | XQS14+A18FZ | SCREW                     |         |
| 103      | RDV0016     | BELT                      |         |
| 104      | RXQ0277     | HEAD BLOCK ASS'Y          |         |
| 104A     | RNW1012A    | WASHER                    |         |
| 104B     | RME0125     | PINCH ROLLER SPRING(L)    |         |
| 104C     | RME0005     | PINCH ROLLER SPRING(R)    |         |
| 104D     | RXL0004-1   | PINCH ROLLER ARM(L)       |         |
| 104E     | RXL0005     | PINCH ROLLER ARM(R)       |         |
| 104F     | RMB0245     | HEAD ARM SPRING(L)        |         |
| 104G     | RME0114     | HEAD ARM SPRING(R)        |         |
| 104H     | RHD14032-1  | SCREW                     |         |
| 105      | RMA0023     | HOLDER(R)                 |         |
| 106      | XQN14+A3    | SCREW                     |         |
| 107      | RHW42002-2  | WASHER                    |         |
| 108      | RFKRS35N1   | MECHANISM BLOCK ASS'Y     |         |
| 108A     | RMQ0292     | HOLD PIECE(L)             |         |
| 108B     | RMQ0293     | HOLD PIECE(R)             |         |

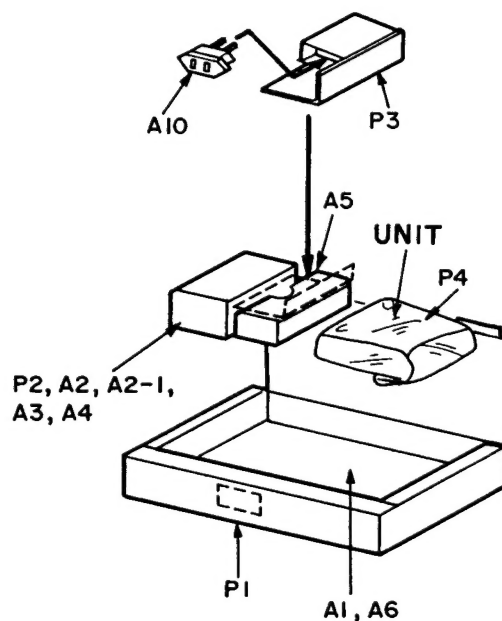
| Ref. No. | Part No.  | Part Name & Description | Remarks |
|----------|-----------|-------------------------|---------|
| 108C     | RHD14031  | SCREW                   |         |
| 109      | RKN0077-K | MECHANISM SHEET         |         |

## PACKAGING

- For (E, EB) areas.



- For (GH) area.



## RESISTORS AND CAPACITORS

Notes : \* Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)  
 \* Resistance values are in ohms, unless specified otherwise, 1 K=1,000 (OHM), 1 M=1,000k (OHM)

| Ref. No. | Part No.     | Values & Remarks | Ref. No.  | Part No.     | Values & Remarks | Ref. No. | Part No.     | Values & Remarks |
|----------|--------------|------------------|-----------|--------------|------------------|----------|--------------|------------------|
|          |              | RESISTORS        |           |              | CAPACITORS       | C222     | ECUV1H681KBV | 50V 680P         |
|          |              |                  |           |              |                  | C223     | ECSTOGY685RR | 4V 6.8U          |
| R2, 3    | ERJ3GEYJ394V | 1/16W 390K       | C1        | ECSTOGY156RR | 4V 15U           | C224     | ECUV1H472MBV | 50V 4700P        |
| R4       | ERJ3GEYJ4R7V | 1/16W 4.7        | C2        | ECUV1H681KBV | 50V 680P         | C225     | ECUV1C1042FV | 16V 0.1U         |
| R6       | ERJ3GEYJ152V | 1/16W 1.5K       | C3        | ECST1AY225RR | 10V 2.2U         | C240     | ECUV1C1042FV | 16V 0.1U         |
| R30      | ERJ3GEYJ431V | 1/16W 430        | C4        | ECSTOGY685RR | 4V 6.8U          | C241     | ECUV1E822KBV | 25V 8200P        |
| R31      | ERJ3GEYJ204V | 1/16W 200K       | C7        | ECSTOGY685RR | 4V 6.8U          | C242     | ECUV1E153KBV | 25V 0.015U       |
| R32      | ERJ3GEYJ433V | 1/16W 43K        | C8        | ECUV1E104MBN | 25V 0.1U         | C244     | ECUV1H682KBV | 50V 6800P        |
| R33      | ERJ3GEYJ101V | 1/16W 100        | C9        | ECSTOGY685RR | 4V 6.8U          | C245     | ECUV1E153MBV | 25V 0.015U       |
| R34      | ERJ3GEYJ102V | 1/16W 1K         | C10       | ECUV1C224MBM | 16V 0.22U        | C246     | ECUV1C1052FN | 16V 1U           |
| R36      | ERJ3GEYJ220V | 1/16W 22         | C12       | ECSTOGY685RR | 4V 6.8U          | C247     | ECUV1C4742FN | 16V 0.47U        |
| R37      | ERJ3GEYJ273V | 1/16W 27K        | C13       | ECA0DV221FZ  | 4V 220U          | C248     | ECUV1H682KBV | 50V 6800P        |
| R38      | ERJ3GEYJ243V | 1/16W 24K        | C14       | ECSTOJY106RR | 6.3V 10U         | C250     | ECUV1C1042FN | 16V 0.1U         |
| R39      | ERJ3GEYJ122V | 1/16W 1.2K       | C15       | ECSTOGY475RR | 4V 4.7U          | C400     | ECSTOJY106RR | 6.3V 10U         |
| R40      | ERJ3GEYJ562V | 1/16W 5.6K       | C16       | ECUV1H682MBV | 50V 6800P        | C401     | ECSTOGY156RR | 4V 15U           |
| R41      | ERJ3GEYJ563V | 1/16W 56K        | C17       | ECUV1C223MBV | 16V 0.022U       | C451     | ECUV1C224MBM | 16V 0.22U        |
| R42      | ERJ3GEYJ223V | 1/16W 22K        | C18, 19   | ECUV1C1042FV | 16V 0.1U         | C452     | ECST1CY105RR | 16V 1U           |
| R43      | ERJ3GEYJ152V | 1/16W 1.5K       | C31       | ECUV1E104MBN | 25V 0.1U         | C453     | ECUV1C224MBM | 16V 0.22U        |
| R102     | ERJ3GEYJ151V | 1/16W 150        | C32       | ECUV1E103KBV | 25V 0.01U        | C454-456 | ECUV1C333KBN | 16V 0.033U       |
| R103     | ERJ3GEYJ682V | 1/16W 6.8K       | C33       | ECSTOGY226RR | 4V 22U           |          |              |                  |
| R104     | ERJ3GEYJ222V | 1/16W 2.2K       | C35       | ECUV1C4742FN | 16V 0.47U        |          |              |                  |
| R124     | ERJ3GEYJ4R7V | 1/16W 4.7        | C36       | ECUV1H102MBV | 50V 1000P        |          |              |                  |
| R125     | ERJ3GEYJ222V | 1/16W 2.2K       | C37       | ECUV1H680KCV | 50V 68P          |          |              |                  |
| R140     | ERJ3GEYJ682V | 1/16W 6.8K       | C38       | ECUV1C1052FN | 16V 1U           |          |              |                  |
| R142     | ERJ3GEYJ222V | 1/16W 2.2K       | C100, 101 | ECUV1H102KBV | 50V 1000P        |          |              |                  |
| R143     | ERJ3GEYJ472V | 1/16W 4.7K       | C102      | ECUV1C223KBV | 16V 0.022U       |          |              |                  |
| R144     | ERJ3GEYJ224V | 1/16W 220K       | C103      | ECUV1C2242FN | 16V 0.22U        |          |              |                  |
| R150     | ERJ3GEYJ102V | 1/16W 1K         | C104      | ECUV1C183MBV | 16V 0.018U       |          |              |                  |
| R202     | ERJ3GEYJ151V | 1/16W 150        | C116      | ECUV1C1052FN | 16V 1U           |          |              |                  |
| R203     | ERJ3GEYJ682V | 1/16W 6.8K       | C121      | ECUV1C1052FN | 16V 1U           |          |              |                  |
| R204     | ERJ3GEYJ222V | 1/16W 2.2K       | C122      | ECUV1H681KBV | 50V 680P         |          |              |                  |
| R224     | ERJ3GEYJ4R7V | 1/16W 4.7        | C123      | ECSTOGY685RR | 4V 6.8U          |          |              |                  |
| R225     | ERJ3GEYJ222V | 1/16W 2.2K       | C124      | ECUV1H472MBV | 50V 4700P        |          |              |                  |
| R240     | ERJ3GEYJ682V | 1/16W 6.8K       | C125      | ECUV1C1042FV | 16V 0.1U         |          |              |                  |
| R242     | ERJ3GEYJ222V | 1/16W 2.2K       | C140      | ECUV1C1042FV | 16V 0.1U         |          |              |                  |
| R243     | ERJ3GEYJ472V | 1/16W 4.7K       | C141      | ECUV1E822KBV | 25V 8200P        |          |              |                  |
| R244     | ERJ3GEYJ224V | 1/16W 220K       | C142      | ECUV1E153KBV | 25V 0.015U       |          |              |                  |
| R250     | ERJ3GEYJ102V | 1/16W 1K         | C144      | ECUV1H682KBV | 50V 6800P        |          |              |                  |
| R400     | ERJ3GEYJ153V | 1/16W 15K        | C145      | ECUV1E153MBV | 25V 0.015U       |          |              |                  |
| R401     | ERJ3GEYJ562V | 1/16W 5.6K       | C146      | ECUV1C1052FN | 16V 1U           |          |              |                  |
| R451     | ERJ3GEYJ472V | 1/16W 4.7K       | C147      | ECUV1C4742FN | 16V 0.47U        |          |              |                  |
| R452     | ERJ3GEYJ332V | 1/16W 3.3K       | C148      | ECUV1H682KBV | 50V 6800P        |          |              |                  |
| R453     | ERJ3GEYJ123V | 1/16W 12K        | C200, 201 | ECUV1H102KBV | 50V 1000P        |          |              |                  |
| R454     | ERJ3GEYJ103V | 1/16W 10K        | C202      | ECUV1C223KBV | 16V 0.022U       |          |              |                  |
| R455     | ERJ3GEYJ512V | 1/16W 5.1K       | C203      | ECUV1C2242FN | 16V 0.22U        |          |              |                  |
| R456     | ERJ3GEYJ562V | 1/16W 5.6K       | C204      | ECUV1C183MBV | 16V 0.018U       |          |              |                  |
| R457     | ERJ3GEYJ821V | 1/16W 820        | C216      | ECUV1C1052FN | 16V 1U           |          |              |                  |
| R458     | ERSL30J102U  | 1/8W 1K          | C221      | ECUV1C1052FN | 16V 1U           |          |              |                  |

# REPLACEMENT PARTS LIST

**Notes:** \*Important safety notice:

 Components identified by  $\triangle$  mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

\*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)

Parts without these indications can be used for all areas.

| Ref. No. | Part No.     | Part Name & Description | Remarks | Ref. No. | Part No.     | Part Name & Description | Remarks          |
|----------|--------------|-------------------------|---------|----------|--------------|-------------------------|------------------|
|          |              | INTEGRATED CIRCUIT(S)   |         | S11      | RSS3A007-A   | S-XBS/TRAIN             |                  |
|          |              |                         |         |          |              | JACK(S)                 |                  |
| IC1      | LA4589W-TFM  | PRE/S-XBS POWER AMP     |         | JK1      | RJJ35T02-1C  | HEADPHONES JACK         |                  |
| IC2      | AN7379SHE2   | DOLBY NR                |         |          |              | <PRINTED CIRCUIT BOARDS |                  |
| IC5      | AN6628SE2    | MOTOR DRIVE             |         |          |              | ASS' Y>                 |                  |
| IC6      | TB2004FN006E | MECHANISM CONTROL       |         | PCB1     | REP1882A     | MAIN P. C. B.           | (RTL)            |
|          |              | TRANSISTOR(S)           |         |          |              | PACKING MATERIAL        |                  |
| Q1, 2    | 2SB815B7TX   | TRANSISTOR              |         | P1       | RPK0464      | PACKING CASE            |                  |
| Q3       | 2SD1328STXRA | TRANSISTOR              |         | P2       | RPQF0126     | ACCESSORIES BOX         |                  |
| Q4       | DTA114WUT106 | TRANSISTOR              |         | P3       | RPQ0409      | PAD                     | (E, EB)          |
| Q5       | 2SD1819STX   | TRANSISTOR              |         | P3       | RPQ0401      | PAD                     | (GH)             |
| Q7       | DTA143ZUT106 | TRANSISTOR              |         | P4       | RPF0127      | PROTECTION BAG          | (GH)             |
| Q8       | 2SD1819RTX   | TRANSISTOR              |         |          |              | ACCESSORIES             |                  |
| Q400     | 2SD1819STX   | TRANSISTOR              |         |          |              |                         |                  |
| Q450     | DTA143ZUT106 | TRANSISTOR              |         | A1       | RQT2411-B    | INSTRUCTION MANUAL      | (E, EB)          |
|          |              | DIODE(S)                |         | A1       | RQT2412-E    | INSTRUCTION MANUAL      | (E)              |
| D1       | MA153TX      | DIODE                   |         | A1       | RQT2413-Z    | INSTRUCTION MANUAL      | (GH)             |
| D4       | LN1261CTR    | L. E. D.                |         | A2       | RFA0310-K    | BATTERY CASE            |                  |
|          |              | VARIABLE RESISTOR(S)    |         | A2-1     | RKK0053-K    | BATTERY COVER           |                  |
| VR1      | EVJ70VA05A54 | VOLUME                  |         | A3       | RFEV124P-KS  | STEREO EARPHONES        |                  |
| VR301    | EVM1SX50B13  | TAPE SPEED ADJUSTMENT   |         | A4       | RP-BP62EYA   | RECHARGEABLE BATTERY    | (E, EB)          |
|          |              | TRANSFORMER(S)          |         | A4       | RP-BP61SY-1  | RECHARGEABLE BATTERY    | (GH)             |
| T1       | RLO9U016T-T  | TRANSFORMER             |         | A5       | RP-BC155EY-0 | BATTERY CHARGER         | (E) $\triangle$  |
|          |              | PHOTO COUPLER(S)        |         | A5       | RP-BC161SYB  | BATTERY CHARGER         | (GH) $\triangle$ |
| Z1       | GP2S27T6     | PHOTO COUPLER           |         | A5       | RP-BC155EBYA | BATTERY CHARGER         | (EB) $\triangle$ |
|          |              | SWITCH(ES)              |         | A6       | RQCB0169     | SERVICENTER LIST        |                  |
| S1       | RSS2A002-A   | FWD/REV                 |         | A7       | RQA0013A     | WARRANTY CARD           | (E, EB)          |
| S2       | RSS2A009-A   | HOLD                    |         | A8 ※     | RKB205ZA-0   | EAR PADS                |                  |
| S3       | RSS2A009-A   | REVERSE MODE            |         | A9       | RFC0019-K    | CARRYING BAG            | (E, EB)          |
| S4       | EVQPM1A15    | REW/TPS                 |         | A10      | RJPOK2ZA     | AC PLUG ADAPTOR         | (GH) $\triangle$ |
| S5       | EVQPM1A15    | FF/TPS                  |         |          |              |                         |                  |
| S7       | EVQPM1A15    | PLAY/STOP               |         |          |              |                         |                  |
| S8       | RSH1B006-2U  | LEAF (OPEN/CLOSE, TAPE) |         |          |              |                         |                  |
| S9       | RSS2A009-A   | DOLBY NR                |         |          |              |                         |                  |

**Notes:**

- The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.
- ※ This part is supplied only with replacement parts li. 1.